Journal OF THE AMERICAN DIETETIC ASSOCIATION

VOL. 24, NO. 6 JUNE 1948

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Maurice E. Shils, Sc.D.

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Florence C. McGucken and Verz R. Goddard

A.D.A. Public Relations Program
Banned in Boston?
Dietetic Interns—United States Army
Reserve Dietitians—United States Army

A. D. A. Annual Meeting, Boston, October 18-22, 1948

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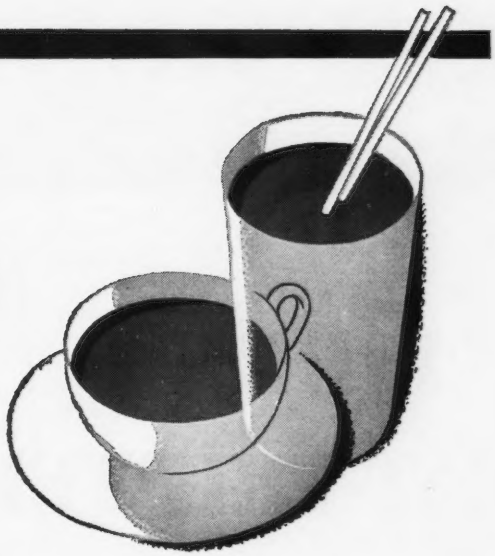

good taste in vitamins

Each serving (2 heaping teaspoonfuls) contains approximately:

Vitamin A.....2000 U.S.P. units
Vitamin B_1 (Thiamine hydrochloride) 2 mg
Vitamin B_2 (Riboflavin).....1 mg
Vitamin C (Ascorbic acid) ....75 mg
Vitamin D (Activated ergosterol) 500 U.S.P. units
Niacinamide.....5 mg

Cal-C-Tose is never advertised to the laity.

Cal-C-Tose,* mixed with hot or cold milk, makes a refreshing, nutritious beverage which tempts even jaded appetites. This tasty chocolate drink supplies liberal amounts of vitamins A, B_1, B_2, C, D, and niacinamide, as well as calcium, phosphorus, iron, and other nutrients. Patients actually enjoy vitamins in the form of Cal-C-Tose.

Hoffmann-La Roche, Inc. • Nutley 10, N. J.

CAL-C-TOSE 'ROCHE'

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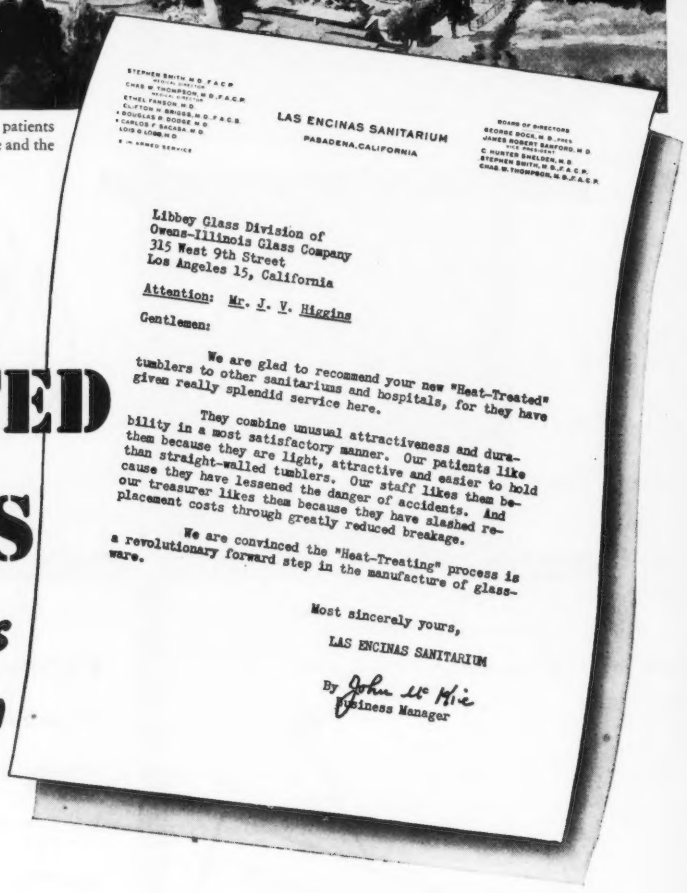
Panoramic view of Las Encinas Sanitarium, Pasadena, California, where patients regain health and happiness surrounded by the peace and beauty of nature and the scientific treatment of modern medicine.

LIBBEY HEAT-TREATED TUMBLERS

slash replacement costs at Las Encinas Sanitarium



LAS ENCINAS SANITARIUM
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Libbey Glass Division of
Owens-Illinois Glass Company
315 West 9th Street
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Attention: Mr. J. V. Higgins

Gentlemen:

We are glad to recommend your new "Heat-Treated" tumblers to other sanitariums and hospitals, for they have given really splendid service here.

They combine unusual attractiveness and durability in a most satisfactory manner. Our patients like them because they are light, attractive and easier to hold than straight-walled tumblers. Our staff likes them because they have lessened the danger of accidents. And our treasurer likes them because they have slashed replacement costs through greatly reduced breakage.

We are convinced the "Heat-Treating" process is a revolutionary forward step in the manufacture of glassware.

Most sincerely yours,
LAS ENCINAS SANITARIUM
By John McKie
Business Manager

THIS famous Pasadena, California, sanitarium finds Libbey Heat-Treated Tumblers give satisfaction to everyone . . . Patients—because they are lighter and easier to hold than ordinary tumblers . . . Staff members—because they reduce accidents from breakage . . . the Treasurer—because they slash replacement costs.

Your operation will get this same satisfaction after adopting Libbey Heat-Treated Tumblers. And *with* this satisfaction you will get these four-way savings: 1. less breakage, 2. reduced replacement costs, 3. lowered investment, and 4. saving on storage space.

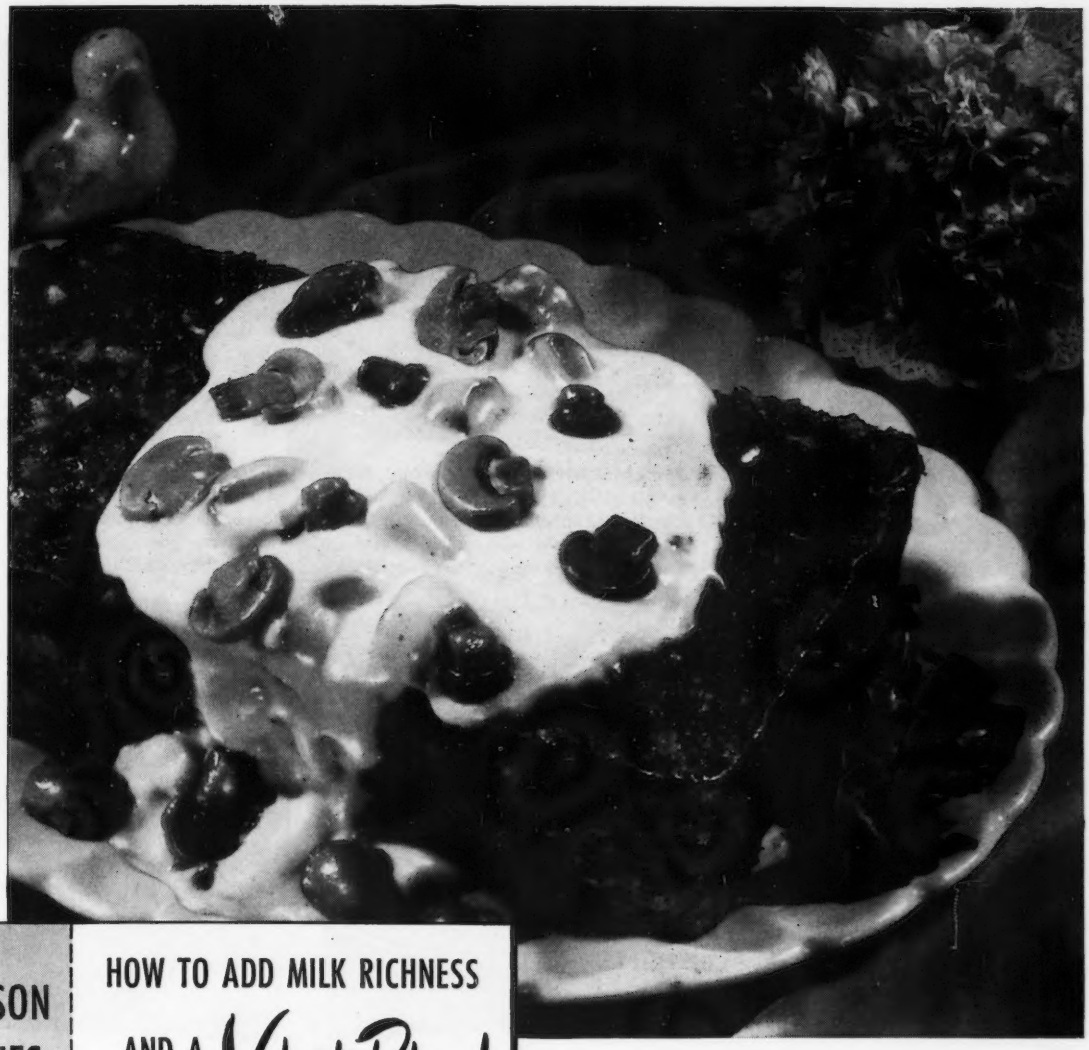
Remember, every Libbey Heat-Treated Tumbler is backed by the famous Libbey Guarantee: "A new glass if the 'Safedge' ever chips."

Ask your supply dealer to show you samples, or write us direct for information.

LIBBEY GLASS

Libbey HEAT-TREATED

Libbey Glass Company, Toledo 1, Ohio



LESSON SERIES

HOW TO ADD MILK RICHNESS ...AND A Velvet Blend

CAN'T BE DONE? Just try it and see . . . this remarkable recipe expands one thrifty pound of ground beef into a sumptuous Dinner Loaf for eight! Double-rich undiluted Carnation Milk, heat-refined and homogenized, contributes a *velvet blend*, as usual, and makes a tender moist loaf that *stays* moist. Suppose we send you a *quantity* recipe card (serving 50) for Carnation Dinner Loaf—also our "Velvet Blend Book" of milk-rich recipes. Address Carnation Co., Dept. 787-F, Oconomowoc, Wis.

CARNATION DINNER LOAF

1 lb. ground raw beef	½ cup finely chopped onion
1 egg	1½ cups Carnation Milk, undiluted
1½ teaspoons salt	2 cups soft bread crumbs
¼ teaspoon pepper	

Mix all ingredients thoroughly and pack mixture into a greased loaf pan (4½ x 8½). Bake in a moderate oven (350°-375° F.) about 40 minutes. May be served with a mushroom sauce. Serves 8.

For a Velvet Blend . . . use "From Contented Cows"

Penny-saving... Time-saving... Oh! So good!

Black and White Pie—eye-catching, taste-tempting! Velvet smooth Jell-O Vanilla Pudding teamed up with creamy Jell-O Chocolate Pudding. Topped with grated chocolate. Easy to make! So easy on the budget!

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Peach Delight—a natural for spring and summer! Pure refreshing Orange Jell-O, blended with the juice and slices of canned peaches and served in sherbets with whipped cream and a sprig of mint.

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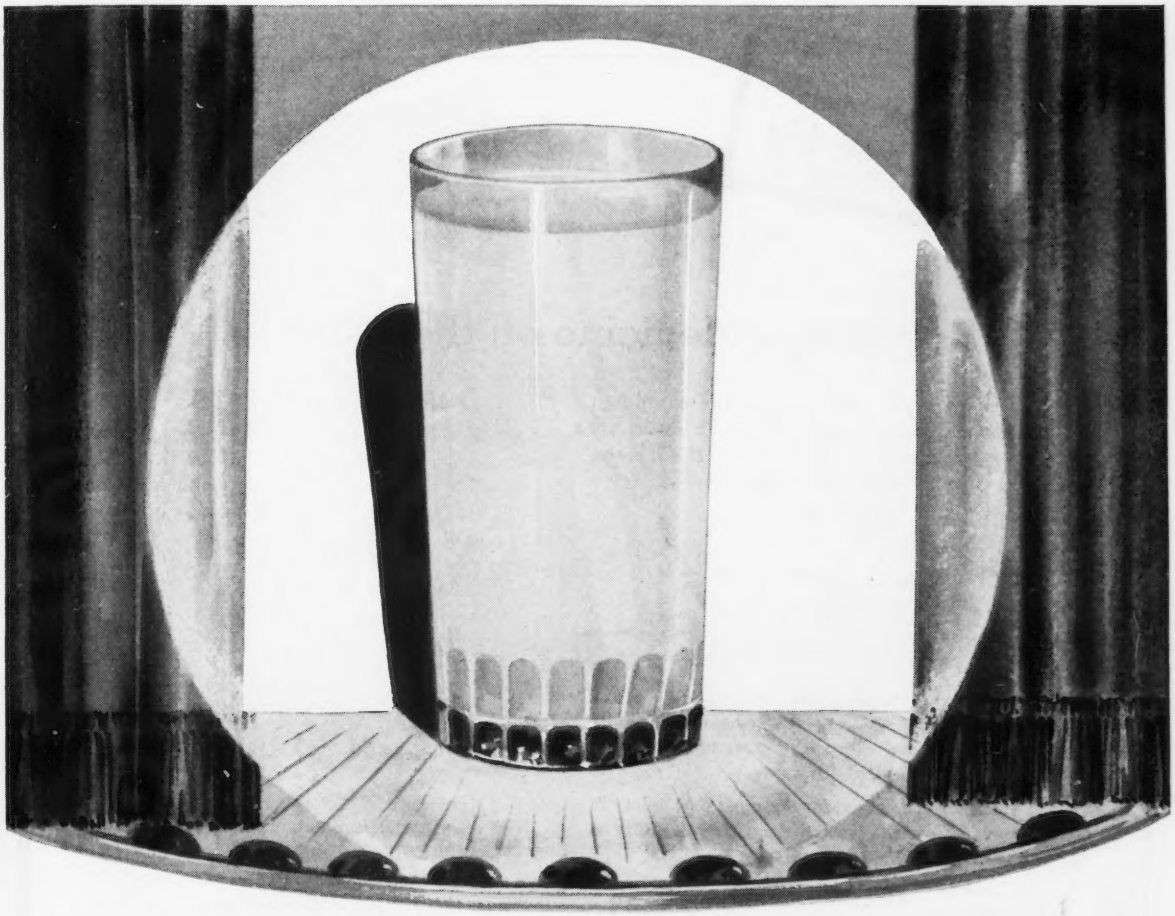
PEOPLE WHO TALK ABOUT GOOD FOOD ...TALK ABOUT GENERAL FOODS!



Milk holds the Spotlight... among today's economy foods

Milk pays big dividends . . . because

Milk's price is low, and relatively stable. The average price of fresh milk is up less than the average price of all foods combined. Comparing figures for 1939 with those available thus far in 1948, the price of all foods has increased 124 percent—fresh milk 72 percent. Only four of the 46 major foods reported show a smaller price increase than milk.

Wage earners in the United States are spending, on the average, a smaller proportion of their income for milk now than in 1939, even though consumers today are using nearly 20 percent more milk.

A quart of milk weighs slightly over two pounds. Compare what you pay for a pound of milk and the per pound cost of any other daily food. Then figure what you get in return.

Milk has no waste. You use every drop you pay for. Milk comes to you ready to use—it saves time, fuel, and effort; there is nothing to discard; nothing need be added to make it palatable and digestible.

Milk, in "extending" other foods, adds substance as well as volume . . . makes them more satisfying and nutritious.

Milk's food value is high. It raises the value of a meal in each of the four major aspects of nutrition: energy, protein, minerals, vitamins. Milk provides the foundation upon which adequate meals can most easily and surely be built.

Milk furnishes a form of protein particularly adaptable to conversion into body material, both for growth and for upkeep of adult tissues.

Milk plays an invaluable part in giving the average American diet a full measure of essential mineral elements. An adequate intake of calcium is hard to obtain without adequate milk consumption.

Milk contains some of all known vitamins, many of them in significant amounts. It is an outstanding source of riboflavin and an important source of vitamin A and thiamine.

Milk contains important substances not yet completely identified. It is one of those "wholes" whose significance in good nutrition is greater than that of the mere sum of its known parts.

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

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111 North Canal Street
Chicago 6, Illinois

National Dairy Council

Since 1918 . . . the National Dairy Council, a non-profit organization, has been devoted to nutritional research and to education in the use of dairy products.

Notes of interest from Borden's Quality Control Labs.

Preventive Medicine on the Dairy Farm

During the last thirty years the campaign against the spread of tuberculosis in cattle has received considerable notice. Today this disease, for all practical purposes, is under control.

But few outside the dairy industry know of the many other regular preventive measures taken by veterinarians and dairy inspectors to protect the health of America's dairy herds.

These men, engaged for the most part solely in dairy work, watch over their cattle as carefully as a doctor would his human patients.

LIFETIME CARE

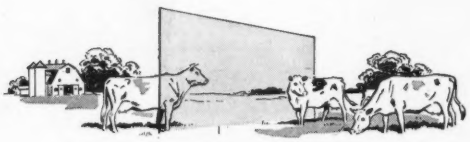
Here, for example, is the sum of the care that a typical cow, such as one that supplies milk for Borden's, receives . . .

She comes into the world with much of the prenatal and postnatal care that a human infant receives. Periodically, she is examined carefully to insure that her environment *remains* free from the danger of tuberculosis. These physical checkups also make sure that she is free from other diseases, and that the general level of her health remains high.

Her heart and lungs are regularly examined by stethoscope. Her udder is carefully examined for lumpiness or indurated tissue. Her milk is regularly tested, too, for any signs of abnormality. And her blood is also tested, so that any cow with a communicable infection may be eliminated.

QUARANTINE OF CATTLE

When signs of a contagious disease appear in a cow, that cow is immediately removed from the herd, and a report is made to the health authorities. If her infection is curable, she is kept in quarantine until well. The rest of the herd is kept under close observation until it has been established that the disease has been confined to the quarantined animals.



The veterinarian is aided by the dairy inspector in the performance of another valuable preventive service—the inspection of the dairy itself. If there are any signs of inadequate sanitation, poor housing of animals, or poor feeding methods, immediate steps are taken to correct the situation.

Today, as an outgrowth of the quality controls established by Gail Borden many years ago, The Borden Company maintains a staff of trained veterinarians and dairy inspectors who work closely with local veterinarians and health authorities.

Their purposes are clear . . . to make certain that our milk supply today is safe, and to insure the safety of tomorrow's milk supply by guarding the health of the calves who will provide it.

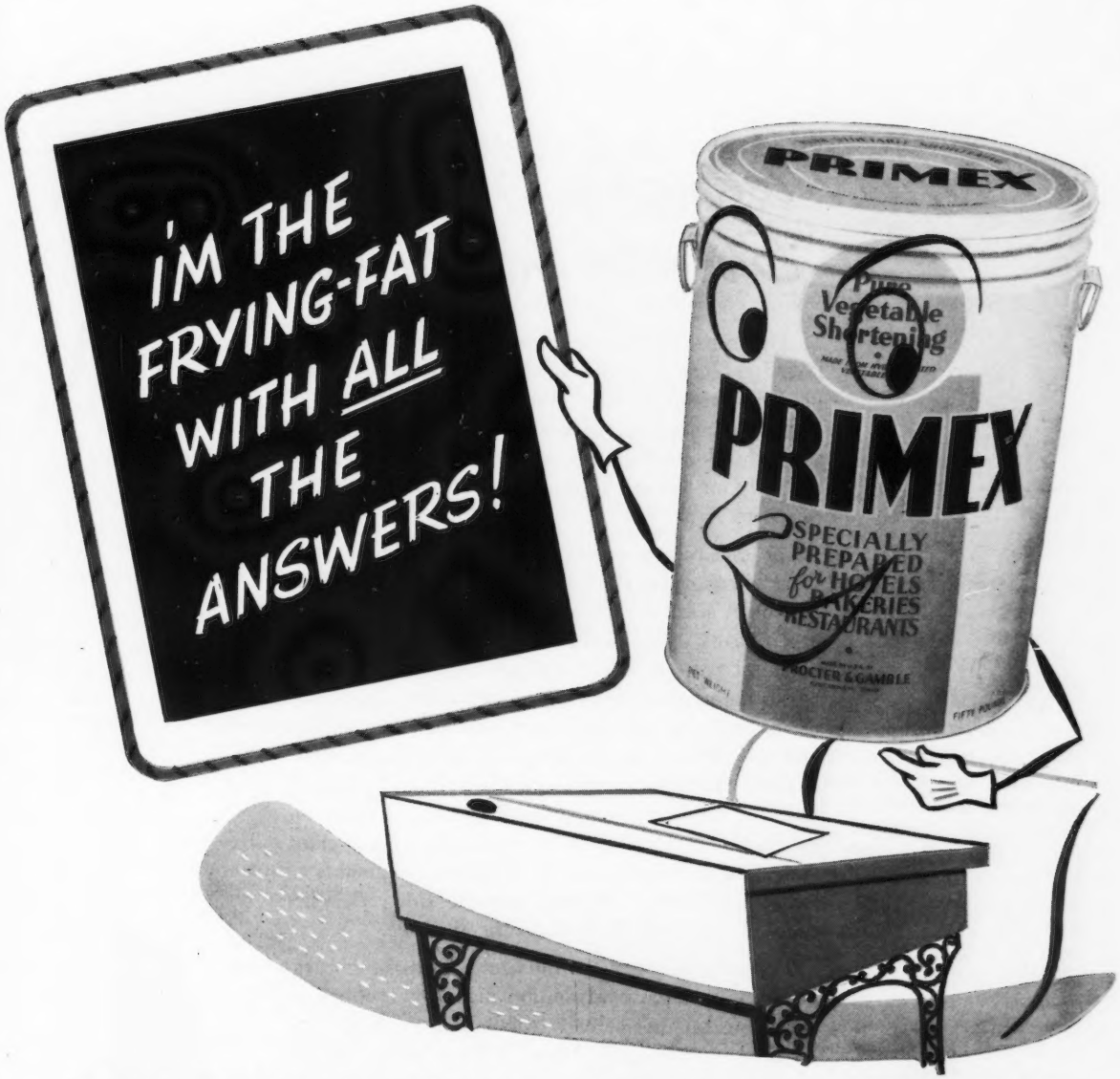
Always you can be sure that Borden's milk products are *products you can trust.*

BETTER NUTRITION THROUGH MILK RESEARCH AND QUALITY CONTROL

The *Borden* Company

350 Madison Ave., New York 17, N. Y.

MANUFACTURERS AND DISTRIBUTORS OF
BIOLAC, BETA LACTOSE, KLIM & DRYCO,
BORDEN'S ICE CREAM, EVAPORATED MILK, HEMO,
INSTANT COFFEE, FRESH MILK AND CHEESE



BEFORE choosing a frying fat you'll want answers to a lot of questions. First of all, will it turn out good-tasting fried foods? Is its quality uniform? Is it economical? Will it stand up under frying temperatures?

Primex has *all* the answers—the *correct* answers—to such questions.

Primex is an all-vegetable, all-hydrogenated fat of uniformly high quality. Foods fried in Primex at proper frying temperatures absorb a minimum of fat . . . are crisp, good-eating, and digestible. Because its own flavor is bland, Primex won't cover up the flavor of any food fried in it.

You'll find Primex an economical frying medium. No other fat has a longer "frying life." Primex won't break down . . . won't smoke excessively . . . after continued frying.

★ ★ ★

From every standpoint, Primex is a sound investment. A month's trial will prove it.

PROCTER & GAMBLE

PRIMEX

All-Vegetable . . . All-Hydrogenated

•

THE SHORTENING THAT SETS THE QUALITY STANDARD

This Metabolic Burden Should be Avoided

That persons who eat an inadequate breakfast or skip breakfast entirely find difficulty in obtaining their needed nutrients from the other two meals of the day is becoming increasingly apparent. A nutritionally unsound breakfast thus imposes an unnecessary burden not only on the other two meals, but also upon the organism.

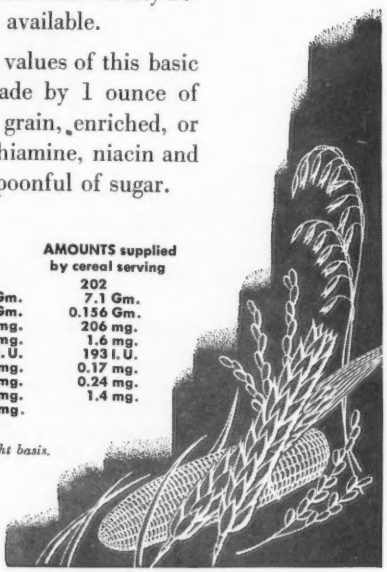
For this reason, nutritionists are unanimous that breakfast should provide from one-fourth to one-third of the day's caloric and nutrient needs. In planning a nutritionally sound breakfast, a widely endorsed basic breakfast pattern serves well as the nucleus around which the morning meal can be built. Providing fruit, cereal, milk, bread and butter, this pattern supplies virtually all essential nutrients in balanced proportion. It is economical and readily available in all communities. The cereal serving, consisting of hot or ready-to-eat breakfast cereal, milk, and sugar, is an important main dish of this meal. It adds significant amounts of essential nutrients and makes possible wide variety because of the many kinds of cereals available.

The table indicates the nutrient values of this basic breakfast and the contribution made by 1 ounce of ready-to-eat or hot cereal* (whole grain, enriched, or restored to whole grain values of thiamine, niacin and iron), 4 ounces of milk and 1 teaspoonful of sugar.

The presence of this seal indicates that all nutritional statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

BASIC BREAKFAST	TOTALS supplied by Basic Breakfast		AMOUNTS supplied by cereal serving
Orange juice, 4 oz.;			
Ready-to-eat or Hot Cereal, 1 oz.;	CALORIES	611	202
Whole Milk, 4 oz.;	PROTEIN	20.7 Gm.	7.1 Gm.
Sugar, 1 teaspoon;	CALCIUM	0.465 Gm.	0.156 Gm.
Toast (enriched, white), 2 slices;	PHOSPHORUS	488 mg.	206 mg.
Butter, 5 Gm. (about 1 teaspoon);	IRON	3 mg.	1.6 mg.
Whole Milk, 8 oz.	VITAMIN A	1074 I.U.	193 I.U.
	THIAMINE	0.52 mg.	0.17 mg.
	RIBOFLAVIN	0.87 mg.	0.24 mg.
	NIACIN	2.3 mg.	1.4 mg.
	ASCORBIC ACID	64.8 mg.	

*Composite average of all breakfast cereals on dry weight basis.



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Applying Nutrition in Industry: Diet and Resistance to Toxic Substances[1]

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PRIMARILY the prevention and control of occupational diseases is a function of the industrial hygienist. It is his duty to recognize working conditions which might prove to be hazardous to health and to devise means of protecting workers from exposure to potentially harmful concentrations of toxic fumes, gases, and dusts. The application of control measures is largely a matter of engineering. However, due to the complexity of many industrial processes, it is often difficult or impossible to afford complete protection by engineering methods; consequently, it is desirable to develop additional means of protecting the health of persons whose work necessitates contact with potentially harmful substances. The field of nutrition offers possibilities which seem to warrant further investigation.

One of the most puzzling and troublesome factors in the practice of occupational medicine is that of individual susceptibility to harmful agents. By "individual susceptibility" is meant the great variability encountered in the physiological reactions of workers who have had similar exposure to a given compound. Does nutritional status play a role in individual susceptibility? If so, then we have a means of safeguarding certain workers, at least to some extent.

Our knowledge of the biochemical mechanisms by which many toxic compounds exert their influence on the organism is very meager. How long have compounds, such as lead, benzene, and chloroform, to mention but a few, been known to exert a harmful influence, and how little do we know of the underlying causes of their observed effects! Such knowledge would be valuable, not only because it might well lead to improved therapeutic procedures, but also because of its value in understanding metabolic processes. A nutritional approach into the field of biochemistry is already proving most fertile. Conversely, in the laboratory study of nutritional, physiological, and biochemical problems, the use of certain industrial poisons may be valuable as a tool, since they have a known pharmacological action.

A number of nutritional practices have been adopted at various times in industry in an attempt to protect workers. Are such practices justified on the basis of experimental evidence?

The idea has long been prevalent that diet influences susceptibility to occupational toxins, and a few historical examples are of interest. The earliest example that I have found (1), if I may stretch the point a little, is the recommendation of the Roman writer, Pliny, that wine dealers should use bitter almonds and cabbage as prophylaxis against alcoholic intoxication. Paracelsus, in his celebrated treatise on the occupational diseases of mine and smelter workers, written about 1533, stated that the diet of miners must be accommodated to their occupation, for in this manner they protect themselves from the subterranean diseases (2). Bernardino Ramazzini (1633–1714), generally considered as the father of occupational medicine, recommended milk for the throat complaints of metal miners. He also wrote (3), "... it is to the province of minerals that we must look in the main for the most suitable and effective remedies to counteract metallic diseases...." In the *British Medical Journal* of 1857, Webb (4) mentions the belief prevalent among the miners and smelters of Derbyshire that "persons engaged in their occupations who take plenty of fat bacon, butter, or indeed fatty matter of any kind, enjoy a remarkable immunity from lead poisoning."

INFLUENCE OF DIET ON EXPERIMENTALLY-PRODUCED CANCER

The possibility of mitigating toxic effects by means of dietary factors has been tested for a large number of substances. However, with the great majority of these compounds, the studies are quite incomplete, with only a few nutrients having been examined. Before considering some of the industrial poisons which have been more thoroughly studied, it is worth while reviewing briefly the work on the

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carcinogenic azo dyestuff, para-dimethylaminoazobenzene, also known as butter yellow, as a model of approach, method, and rewarding results that might apply to any one of a number of toxic substances.

Japanese scientists (5–7) observed that butter yellow caused liver cancer in rats fed a diet of unpolished rice and carrot. No cancer occurred if liver or yeast were added to the diet. In searching for the protective factors in liver and yeast, investigators in this country (8–10) found that the addition of casein and riboflavin to the rice-carrot diet markedly reduced the incidence of tumors. Further supplements of cystine and choline (11) completely protected the animals. Biotin (11) and pyridoxine (12) were found to have an opposite effect; that is, they were procarcinogenic. When it was found that the fat component of the diet had a marked influence (13, 14), the dietary factors involved were shown to be even more complex.

Rhoads and associates (15) at Cornell Medical College observed that when the carcinogen was added to the diet, rats excreted their liver reserves of riboflavin. More recent work (16) re-emphasized the role of riboflavin, since the liver concentration of this vitamin (but not that of any other vitamin so far measured) correlated well with the ability of a diet to protect against tumor formation by butter yellow. In addition, in testing various azo compounds, it was found (16, 17) that the level of riboflavin in the liver bears a rough inverse relation to carcinogenicity.

The observations on riboflavin excretion led Rhoads' laboratory to study the activities of enzyme systems which contain vitamins, and it was found (15, 18) that enzymes containing nicotinamide and thiamine were reduced in activity. Whereas butter yellow itself is not inhibitory, certain of its cleavage or breakdown products are. Since it also occurs with aromatic diamines derived from compounds related to butter yellow but which have not been demonstrated to be carcinogenic (18), this effect on the enzymes is probably not directly involved in the carcinogenic process. Paraphenylenediamine and related compounds are inhibitory, and it is interesting to note (19) that some of these compounds are used in the fur industry as dyes and are known to cause a high incidence of skin disorders.

CHLORINATED HYDROCARBONS

More than thirty years ago it was noticed (20, 21) that animals fed a high-carbohydrate diet were less susceptible to chloroform anesthesia than those on a diet rich in fat. Somewhat later it was found that liver regeneration following chloroform poisoning occurred more rapidly in the animals on a high-carbohydrate diet than in those on a high-fat diet; in addition, high-protein diets exerted a protective effect (22, 23), while starvation increased susceptibility (23). These early results have been repeatedly confirmed.

The protective effect of protein and of carbohydrate in contrast to fat against liver damage from chloroform was re-emphasized in 1939 by Goldschmidt, Vars, and Ravdin (24). Miller and Whipple (25, 26) found the extent of liver injury from chloroform to increase as the body stores of protein were depleted, while methionine or cysteine plus choline administered before or up to 4 hr. after chloroform anesthesia gave significant protection (27). Methionine given at the onset of chloroform anesthesia to dogs on a good stock diet also conferred protection (28).

A marked effect of diet on susceptibility to other chlorinated hydrocarbons has likewise been noted. The survival time of rats exposed to methyl chloride under constant conditions was eight days with a 9 per cent casein diet (29), but was extended to thirty days with 35 per cent casein. When cystine and methionine were given in addition to 20 per cent casein, the survival was extended to eighty days.

Ethylene dichloride (1,2 dichloroethane), which is of industrial importance in synthetic rubber manufacture, and 1,2 dichloropropane, used as a solvent and insecticidal fumigant, were more toxic to rats on a low-protein diet than on a high-protein diet (30, 31), while methionine or cystine plus choline greatly increased resistance. Further work at the National Institute of Health (32) on ethylene dichloride showed that even when mice were on an adequate diet, protection was afforded when methionine and certain compounds containing an amino group in a benzene ring, such as para-aminobenzoic acid, aniline, and sulfanilamide, were given orally just before exposure. It is of interest that Leach and Forbes (33) had found sulfonamide drugs protective against carbon tetrachloride, while McCarty and Tillett (34) had found sulfapyridine protective against benzene. Tetrachloroethylene was reported (35) to have reduced toxicity for mice when the sulphur-containing amino acids were fed.

Animal experiments with carbon tetrachloride indicate somewhat different effects of nutrients from those obtained with the other chlorinated hydrocarbons mentioned. Thus Bollman (36) found carbohydrate to be more protective than protein. György and others (37) observed that rats fed a low-protein diet showed greater mortality than those on a high-protein regime. And, while methionine was found to be a good substitute for protein, nevertheless, the protective influence of protein and methionine seemed to be more on the kidney than on the liver. Furthermore (38–40), methionine gave no protection to dogs with a low-, medium-, or high-protein intake. A lack of methionine effect was also found (41) in rats receiving levels of protein regarded as adequate.

In studies undertaken in an attempt to explain

certain puzzling deaths, particularly in children, following administration of carbon tetrachloride as an anti-helminthic, Lamson and co-workers (42) found that they could induce similar symptoms in dogs which were given carbon tetrachloride while on a low-calcium diet. The symptoms could be relieved by proper calcium therapy. It was postulated that the liver damage caused by the chlorinated hydrocarbon resulted in an increased blood bilirubin which formed an un-ionized complex with calcium, thus reducing the blood calcium-ion to tetany-inducing levels.

There have been two recent reports (43, 44) on the use of methionine along with either a casein digest or intravenous glucose and a high-protein diet to treat cases of human CCl_4 poisoning. The authors believed that the methionine was beneficial. However, the work is certainly not conclusive, and in a recent article (45) the Council on Pharmacy and Chemistry of the American Medical Association did not recommend the use of methionine for this purpose; it urged further clinical trial. Another reason for caution is the rather overwhelming evidence (46) that the human requirements for methionine are qualitatively as well as quantitatively different from those of the dog and the rat, so that results obtained with these species may not hold for man.

AROMATIC NITRO COMPOUNDS

Of the aromatic nitro compounds used in industry, trinitrotoluene has received the most attention. Its toxic properties became a serious problem during World War I and less so during World War II. During the first war it was recognized that diet might play a role in susceptibility. Thus in 1917 Viscount Chetwynd, manager of a large ordnance plant in England, told the Royal Society of Medicine (47) that it had been noted that a larger proportion of women than of men exhibited gastro-intestinal upsets when exposed to TNT. A study revealed poorer eating habits among the women than among the men, and a special effort was made to insure better meals for them. According to the account, within four months after the inauguration of the nutritional program, the incidence of gastric cases among women dropped from 11.6 per cent to below 2 per cent.

Since that time a number of statements have appeared (48–55) recommending the use of high-carbohydrate diets, large amounts of ascorbic acid, calcium, or milk, or a combination of foods or nutrients as preventive or therapeutic measures in the explosives industry. Some investigators (56, 57) have questioned the values of some of these procedures. Nevertheless, many munitions plants in this country and abroad have adopted some of these dietary procedures as prophylaxis against TNT poisoning.

In 1920 Voegtlin, Hooper, and Johnson (58) reported that dogs on a mixed or meat diet seemed to be more resistant to TNT than those fed on bread and milk. Little more was done on the problem until 1942 when Himsworth and Glynn (59) clearly demonstrated in rats that the nature of the diet greatly influenced the development of toxic manifestations due to TNT. Severe symptoms and marked pathological lesions resembling those in human poisoning developed in the animals taking a high-fat diet, while in animals on a high-carbohydrate diet, the ill effects were slight; in those on a high-protein diet, no changes occurred. The contrasting results were not due to differences in absorption of TNT. It should be noted, however, that the high-fat diet was also the lowest in protein on a caloric basis. A clearer picture would have been obtained if the protein intake had been held constant in comparing the effects of carbohydrate and fat.

Clayton and Baumann (60) have found that mice were more resistant to the related compound, 2,4, dinitro toluene, when on a high-fat diet than on a low-fat diet; in addition, the animals grew better on the high-fat diet than on either a high-protein or high-carbohydrate diet. These observed differences between tri and dinitro toluene demand further study.

Investigations were undertaken at the National Institute of Health during the recent war on the value of ascorbic acid in TNT poisoning. It was found (61) that this vitamin had little effect on the course of chronic poisoning in normal rats, guinea pigs, or rabbits—or in dogs (62). With cats (61), which are relatively highly susceptible to TNT, ascorbic acid appeared to have a slightly favorable influence. Induced deficiency of ascorbic acid in guinea pigs (63) lowered their resistance to TNT so that the death rate was twice as great among the deficient animals as among the controls in the first four days of TNT administration. Unfortunately, the effects of TNT in mild, chronic ascorbic acid deficiency were not studied.

When milk was added to their basic diet (62), dogs receiving TNT had the toxic effects alleviated only slightly. There was no evidence that milk promoted detoxification since the blood changes were similar to those in control animals not receiving milk. However, the animals receiving milk lost less weight, and the inflammatory reactions in the intestinal tract were, as a rule, less severe. In the milk-fed dogs, the intestinal mucosa was covered with a fibro-mucoid film not seen in the control animals, so that milk may have had a demulcent action protecting the mucous membranes and interfering with TNT absorption.

BENZENE (BENZOL)

In the case of benzene we also find a relationship between susceptibility and diet. A series of papers by Li, Freeman, and others (64–66) emphasized

the fact that high-protein diets markedly decreased the susceptibility of dogs and rats to the effects of chronic benzene exposure.

The French, German, and Italian literature is replete with papers claiming that ascorbic acid is beneficial in human benzene poisoning, yet a careful perusal of a number of such papers (67–75) fails to reveal anything convincing. The animal experiments are also unconvincing because of the small number of animals used (76, 77), lack of harmony between conclusions and data (76), or lack of adequate controls (76–78). A well conducted and controlled study to answer this question conclusively would seem to be highly desirable.

A folic-acid-containing liver extract which was effective in treating leukopenia produced in rats by an insoluble sulfa drug was tested on a benzene-induced leukopenia but without success (79).

LEAD

Lead enters the body most commonly through the gastrointestinal and respiratory tracts. Ingested lead compounds go into solution to a greater or lesser extent in the gastric and intestinal juices, and in order to render absorption less complete, it has been suggested that foods be eaten which depress or retard gastric secretion. The use of milk to this end was proposed by Carlson (80). Miyasaki (81) reported the inhibition of lead absorption by milk and suggested that the milk may form an insoluble lead phosphate. However, Aub and co-workers (82), as well as Kehoe and colleagues (83), were unable to find any significant influence of milk upon lead absorption from the gastrointestinal tract. Recently it was reported (84) that iron salts, such as iron citrate, reduced the toxicity of lead, a possible explanation being that they interfere with absorption.

Aub and co-workers at Harvard University (82) reported a similarity of behavior of calcium and lead. Observations (85, 86) using radioactive lead have confirmed this. For example, no lead could be found in the bones of rats with rickets in those areas where large quantities are usually deposited following lead administration. However, intensive storage was noted following recovery from rickets. These studies seem to indicate that conditions which favor calcium retention simultaneously favor the deposition of lead in bones and, conversely, factors which tend to produce mobilization of calcium from the bones also tend to liberate lead from the skeleton. Acting upon this evidence, the Harvard investigators advocated a treatment of lead poisoning based upon dietary considerations. In the presence of acute symptoms of poisoning, the main objective is to bring about a decrease in the quantity of circulating lead by hastening its storage in harmless deposits in the skeleton. To accomplish this, a high-calcium and high-phosphorus intake was recommended. Clinical experience (82, 87, 88) is divided on the value of this procedure.

A number of investigators (89–94) have found that high-calcium diets depressed lead retention while a low-calcium intake increased the lead retention. The role of phosphorus in the diet is a matter of disagreement. Lederer and Bing (92) have pointed out that, in those animal experiments where lead was given orally, the effect of calcium on the assimilation of lead was dependent mainly or entirely upon events occurring in the digestive tract. In their experiments, the retention of lead injected intraperitoneally into rats was independent of the calcium and phosphorus contents of the diet. In rat experiments where moderate amounts of lead were fed, Shields and Mitchell (94) found that the only method of securing lead storage was to lower the calcium content of the diet to inadequate or borderline levels.

Kehoe and colleagues (83) gave two healthy subjects 1 and 2 mg. of soluble lead daily for forty and twenty-three months, respectively. Variations in calcium and phosphorus intake had no appreciable influence on the absorption and gross retention of the lead.

However, these experiments do not necessarily contradict the views of Aub and co-workers, since the work just mentioned is concerned with the factors affecting intestinal absorption and not with the deposition of circulating lead which is poisoning the animal and which is of concern in the therapy of lead poisoning. This point must be emphasized, since Aub's work and the absorption experiments have been assumed by some to be in conflict. Only further investigation on the metabolism of absorbed lead can clarify this point.

In two papers (95, 96) describing observations on workers with symptoms of lead poisoning, ascorbic acid has been reported to be beneficial. However, neither study was adequately controlled. On the other hand, in a controlled study, Evans and co-workers (97) were unable to find any significant effect of 100-mg. doses of ascorbic acid given daily to workers in a plant making tetraethyl lead. Other investigators (83, 87, 98, 99) also have not found any effect of this vitamin.

In young or rachitic rats vitamin D increased lead absorption (86, 93), while in adult animals, no effect of vitamin D on storage was noted (91).

In conclusion, this presentation has touched on only a rather small part of the work already accomplished in this field. Nevertheless, we are still in the first stage of scientific knowledge of our subject. That is, we are still in a period of observation and classification without much understanding of the underlying reasons for the effects that we observe. Thorough research on dietary influences on toxic substances should prove worth while from many points of view.

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A. D. A. Policy on Legislation

At the mid-year meeting of the Executive Board of the American Dietetic Association held in Chicago in February, the following statement of the Association's policy on legislative matters was adopted:

"It is the policy of the American Dietetic Association to take active interest as an Association in matters affecting the professional status of the profession. In other legislative matters of interest to dietitians and nutritionists, the national and affiliated associations do not act as units. It is expected that individual members of the Association will inform themselves and take an active interest in and lend their support to legislation which may be expected to improve the nutritional status of human beings."

Furthermore, we have been informed by those in Congress that effort and interest on the part of individuals is more effective in many instances than group action. Membership in the League of Women Voters is an excellent way for individual members of affiliated associations to keep informed on legislative matters.

Another medium through which members might keep informed of legislative matters is through a subscription to the Social Legislation Information Service, or other similar, reputable organizations. The Social Legislation Information Service is a non-profit association supported by contributions and subscriptions. It takes no position for or against legislation, and through a bulletin reports impartially on federal social legislation and activities of federal agencies affecting family life, children, and community services in the areas of health, education, welfare, housing, employment, and recreation. Headquarters for the Service are located at 930 F Street, N.W., Washington 4, D. C. Without cost or obligation, sample issues of the Social Legislation Information Service and a descriptive folder of the work of the organization will be mailed on request. The Service also has an "on approval" subscription plan, whereby after receiving two issues, the subscriber who is not satisfied with the service may cancel his order. The subscription price is $15 annually.

Blood Regeneration in Women Blood Donors

II. Effect of Protein, Vitamin, and Mineral Supplements[1]

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THIS paper reports the second and last portion of a study of blood regeneration in a group of college girls who volunteered as donors and served as subjects on a special feeding program. The first report (1) showed the improvement in blood regeneration when the donors received a diet which furnished 75 gm. protein daily as compared with only 50 gm.

Because hemoglobin and red cell values are slow to return to normal after a loss of 500 ml. blood, it seemed advisable to try to find some dietary supplements which, when given either before or after a blood donation, would hasten its replacement. For this purpose, 129 subjects were treated and studied while acting as voluntary blood donors.

PROCEDURE

The plan of the study as it was carried out over a two-year period is summarized in Table 1 which shows the pre-donation and post-donation treatment, the protein content of the diet, and the number of subjects. For six weeks following the donation of 1 pt. of blood, three groups of subjects had daily intakes of 50 gm., 75 gm., and 90 gm. protein respectively, and three had the same levels of protein intake plus a daily supplement of 75 mg. iron. (Those with intakes of 90 gm. daily received 40 gm. as a supplement and 50 gm. as dietary protein. The method of supplementation is explained below.) Two other groups were on self-chosen diets following the donation—one receiving 1 mg. copper daily and the other 3 mg. riboflavin daily. Three groups of subjects received daily supplements during the five days *prior* to the donation as follows: One group had 75 mg. iron, and one had 75 mg. iron plus 2 mg. copper added to the self-chosen diets, while the third group had a controlled diet which furnished 100 gm. protein. A final group received no supplements at any time and remained on self-chosen diets.

TABLE 1

Record of diet and supplementation before and after blood donations

GROUP IDENTIFICATION	NUMBER OF SUBJECTS	DAILY SUPPLEMENTATION		PROTEIN CONTENT OF DIET FOLLOWING DONATION
		For 5 days prior to donation	For 42–45 days following donation	
1943–44 Controlled Diet				
				gm.
A**	17	none	none	50
B	14	none	75 mg. iron	50
C**	11	none	none	75
D	14	none	75 mg. iron	75
1944–45 Self-Chosen Diet				
1	13	none	40 gm. protein	50*
2	13	none	40 gm. protein + 75 mg. iron	50*
3	12	75 mg. iron	40 gm. protein	50*
4	11	75 mg. iron + 2 mg. copper	40 gm. protein	50*
5	11	controlled diet containing 100 gm. protein	none	50
6	12	none	1 mg. copper	50
7	18	none	3 mg. riboflavin	50
8	11	none	none	50

* Not including supplemental protein.

** Reported previously (1).

In order to increase the protein intake of some of the groups to 90 gm., a supplement was used which provided 40 gm. protein. This included 1 oz. of Cheddar cheese and a large meat pattie made of lean beef, dried egg, a small amount of fat, and

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TABLE 2

*Nutritive value of protein supplement given to blood donors**

FOOD	WEIGHT	CALORIES	PROTEIN	MINERALS			VITAMINS		
				Calcium	Phosphorus	Iron	A	B	G
	gm.		*gm.*	*gm.*	*gm.*	*mg.*	*I.U.*	*mcg.*	*mcg*
Beef, lean	128	193	25.6	0.01	0.28	3.80		107	149
Cheese, Cheddar	35	138	8.4	0.30	0.21	0.03	609	12	175
Eggs, dried	7	79	6.4	0.03	0.11	1.40	570	60	170
Total.....		410	40.4	0.34	0.60	5.23	1179	179	494

* Calculated according to Nutritional Yardstick, Rev. ed. Chicago: National Live Stock and Meat Board, 1946.

seasoning. The nutritive value of this supplement is given in Table 2. These supplements were dispensed to the subjects daily and were eaten in addition to their regular diets, usually between meals. Frequent records were kept on the self-chosen diets and calculations indicated that the protein content approximated 50 gm. daily. Mineral and vitamin supplements were dispensed when the girls came for weekly blood tests. The 75-mg. iron supplement was furnished from hydrated ferrous sulphate in coated tablet form; the copper supplement was made from copper sulphate dispensed in dextrose and weighed into gelatin capsules; the riboflavin was in tablet form. The controlled diet which furnished 100 gm. protein was served from the research kitchen.

Analyses of venous blood samples taken from each subject before breakfast were made on the day of the donation and at the end of each week for six weeks. They included the determination of hemoglobin, red cell count, cell volume, and serum protein. Hemoglobin was determined by the method of Todd and Sanford (2) and the fully developed oxyhemoglobin was read in a Sanford-Sheard photelometer. Sanford and Magath centrifuge tubes with 1.6 per cent potassium oxalate as the anticoagulant were used for cell volume determinations (2). Serum protein was determined by the falling drop method using a xylene-bromo-benzene mixture.

RESULTS

The results of the blood tests have been averaged for each group of subjects and are presented in Table 3. The results of each of the tests made before the donation are labeled "donation value," and all the values obtained following the donation are expressed in terms of percentage of the donation value. This procedure relates each result to the blood value at the time of the donation and measures progress in terms of restoring the blood to that concentration.

The hemoglobin values showed the most marked changes and will be discussed in greatest detail.

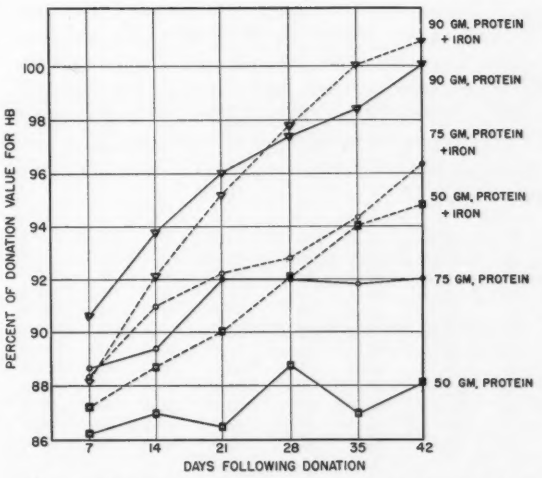

FIG. 1. *Hemoglobin regeneration on three levels of protein intake with and without added iron.*

Effect of different levels of protein. The average hemoglobin values of each of the groups on the three protein intakes differed in the amount they decreased following the donation, and in the extent of recovery by the end of six weeks. (Fig. 1.)

Seven days after the donation, the hemoglobin values for the groups on the intakes of 50 gm., 75 gm., and 90 gm. protein had dropped to 86.0, 87.7, and 90.5 per cent respectively of the donation values, and by the end of six weeks had increased to 87.3, 92.0, and 100.0 per cent respectively. These figures suggest a definite relationship between the level of protein intake and rate of hemoglobin regeneration following loss of 1 pt. of blood.

Effect of a 75-mg. iron supplement. Addition of iron to the diets which furnished 50 gm. and 75 gm. protein improved hemoglobin production above that which occurred on the same protein levels without the iron supplement. The results are charted in Figure 1. Six weeks after the blood loss, hemoglobin values were 94.8 and 96.3 per cent of the donation values for the groups on the 50-gm. and 75-gm. protein plus 75 mg. iron as compared with 87.3 and 92.0 per cent respectively for the groups who did not receive the iron supplement. The improvement resulting from the addition of this supplement was the most marked for the group with a protein intake of 50 gm.; the values exceeded those for the group on a protein intake of 75 gm. and almost equaled those for the group on 75 gm. protein plus 75 mg. iron.

The effect of adding iron to the diet which furnished 90 gm. protein was slight and insignificant. At the end of one week the average hemoglobin value of the group was 88.2 per cent of the donation value as compared with 90.5 per cent for the group without the iron supplement and at the end of six weeks the values were 100.8 and 100.0 per cent respectively.

TABLE 3
Blood value of donors

GROUP	BLOOD VALUES						
	At time of donation	7 days after donation	14 days after donation	21 days after donation	28 days after donation	35 days after donation	42 days after donation
Hemoglobin							
	gm./100 ml.	%	%	%	%	%	%
A	12.6	86.0	86.4	85.9	88.1	86.4	87.3
B	13.0	87.2	88.7	90.0	92.1	94.0	94.8
C	13.1	87.7	89.6	92.0	92.0	91.7	92.0
D	13.0	88.4	90.7	92.0	92.8	94.2	96.3
1	12.8	90.5	93.7	96.0	97.6	98.4	100.0
2	12.9	88.2	92.1	95.3	97.6	100.0	100.8
3	13.1	88.5	92.4	93.9	96.9	100.0	100.0
4	13.1	90.5	94.5	96.9	98.4	100.0	100.8
5	12.8	85.1	92.2	94.6	96.1	96.9	95.3
6	12.9	90.6	91.4	93.0	92.2	96.9	96.0
7	13.0	90.0	90.8	92.3	94.6	95.4	96.1
8	13.0	88.5	87.7	90.4	90.8	89.5	90.0
Red Cell Count							
	millions/ cu.mm.						
A	4.509	89.0	89.6	87.6	95.0	96.6	94.9
B	4.625	92.4	91.1	91.8	98.1	97.4	97.8
C	4.541	91.2	92.3	92.0	94.0	96.4	97.6
D	4.621	89.3	88.1	90.9	94.6	95.3	99.7
1	4.443	90.8	90.7	94.2	96.4	98.0	98.4
2	4.312	92.2	96.0	97.8	102.3	103.3	104.1
3	4.350	95.3	94.7	97.9	97.9	103.4	103.3
4	4.386	90.8	94.7	99.0	99.6	101.3	100.7
5	4.690	87.3	93.9	98.3	95.7	99.6	99.2
6	4.643	92.1	92.2	92.8	97.7	100.5	97.3
7	4.750	86.8	92.6	95.5	94.5	97.3	98.1
8	4.666	87.4	90.5	93.0	92.8	94.3	96.5
Volume Index							
A	1.0	97.8	97.2	100.1	93.2	91.8	96.1
B	1.0	99.2	100.0	102.4	98.5	99.9	102.9
C	1.0	95.3	98.0	99.8	101.7	100.9	95.2
D	1.0	95.4	102.6	103.4	96.6	102.6	95.4
1	1.0	105.7	103.2	102.0	99.0	101.0	99.0
2	1.0	105.0	103.0	101.0	98.0	109.0	97.0
3	1.0	99.0	99.0	101.0	102.0	97.0	99.0
4	1.0	102.0	100.0	96.0	105.0	95.0	98.0
5	1.0	103.9	97.0	97.5	100.3	95.9	96.0
6	1.0	100.8	103.1	100.2	97.6	96.6	99.6
7	1.0	103.7	103.5	98.4	99.8	97.1	99.2
8	1.0	107.7	101.9	100.4	100.4	99.3	100.2
Color Index							
A	1.0	96.6	97.0	98.5	93.6	89.9	92.8
B	1.0	94.4	97.4	98.0	93.9	96.5	96.9
C	1.0	96.2	97.1	100.0	97.9	95.1	94.3
D	1.0	99.0	103.0	101.2	98.1	98.8	96.6
1	1.0	99.7	103.3	101.9	101.2	100.4	101.6
2	1.0	95.7	95.9	97.4	95.4	96.8	96.8
3	1.0	92.9	97.6	95.9	99.0	96.7	96.8
4	1.0	99.7	99.8	97.9	98.8	98.7	100.1
5	1.0	97.5	98.2	96.2	100.4	97.3	96.1
6	1.0	98.4	99.1	100.2	94.4	96.4	98.7
7	1.0	102.7	98.1	96.6	100.1	98.0	98.0
8	1.0	101.3	96.9	97.6	97.8	94.9	93.3
Serum Protein							
	gm./100 ml.						
A	7.29	95.6	95.1	95.1	98.1	—	101.0
B	7.23	95.0	96.8	96.8	97.8	—	100.0
C	7.08	95.0	97.1	96.7	96.3	—	100.0
D	6.67	98.8	99.7	99.5	100.1	—	99.5
1	6.63	98.1	97.8	98.9	99.1	98.1	97.3
2	6.51	97.3	100.3	100.1	101.1	100.4	100.6
3	6.47	97.7	99.1	101.4	102.8	102.5	100.8
4	6.38	100.5	101.6	100.0	101.4	102.8	103.0
5	6.81	94.6	97.1	97.2	97.3	100.0	100.0
6	6.56	99.5	97.7	98.1	96.0	100.8	100.8
7	6.64	97.3	98.5	96.8	96.7	97.3	99.6
8	6.53	98.3	95.9	96.5	95.7	98.2	100.5

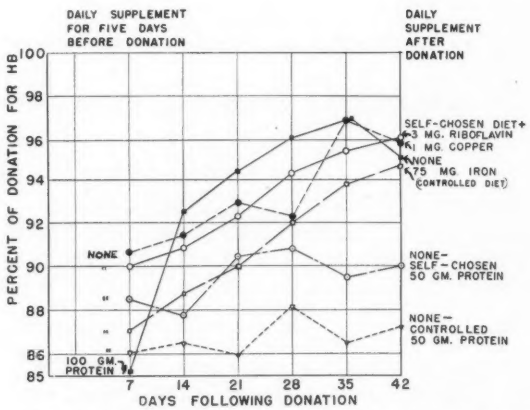

FIG. 2. *Hemoglobin regeneration on a 50-gm. protein intake with and without supplements.*

Effect of a copper and of a riboflavin supplement. Following one of the blood donations, two groups of donors remained on their self-chosen diets, which current records showed contained approximately 50 gm. protein daily. One group included subjects who had received the iron supplement following their previous donation and this time were given a supplement of 1.0 mg. copper daily. The other group, which had had no iron therapy, received 3 mg. riboflavin daily.

The effects of these two supplements were similar and are illustrated in Figure 2. At the end of the first week after the donation, the hemoglobin level had returned to 90.6 per cent and 90.0 per cent of the donation value for the copper and riboflavin groups respectively and rose to 96.0 and 96.1 per cent by the end of six weeks. Except for the higher values at the end of the first week, the recovery was similar to that of the groups on 50 gm. protein plus iron and on 75 gm. protein plus iron.

Effect of supplements given for five days prior to blood loss. For five days prior to the loss of 1 pt. blood, one group of donors ate a controlled diet which furnished 100 gm. protein and then returned to their self-chosen diets after the donation. Two other groups which were going to receive 90 gm. protein daily after the donation also had pre-donation supplements for five days—one group had 75 mg. iron and the other group had 75 mg. iron plus 2 mg. copper daily.

Pre-donation feeding of the high-protein diet followed by a self-chosen diet had no advantage over the 50-gm. protein level until the end of the second week. At that time, the hemoglobin was 92.2 per cent of the donation value as compared with 86.4 per cent for the 50-gm. protein level and until the sixth week stayed above all the groups except those which received 90 gm. protein following the donation. Pre-donation supplements of iron or of iron plus copper followed by a post-donation protein intake of 90 gm. did not significantly improve the recovery of hemoglobin above that which occurred on the 90-gm. protein intake

without pre-donation supplementation. These figures are shown graphically in Figures 2 and 3.

To summarize, the groups which showed significant superiority to other groups in hemoglobin regeneration are listed in Table 4. Differences between two groups in the percentage recovery at the end of each week and the probable errors of these differences have been calculated.

Red cell values. The red cell content of the blood fluctuated throughout the study for all groups. By the end of the first week after the blood loss, red cell values approximated 90 per cent of the donation value and rose higher during subsequent weeks. The best recovery occurred in the three groups on a protein intake of 90 gm. with a mineral supplement given either before or after donation. The lowest values at the end of six weeks were for the two groups on lower protein intakes—one on a controlled intake of 50 gm. and the other on a self-chosen, unsupplemented protein intake which approximated 50 gm.

Volume and color indices. The cell volume index which expresses the relationship between the size as measured by volume and the number of red cells, and the color index which expresses the relationship between the number of cells and their hemoglobin content, did not deviate greatly from normal for any of the groups. In the 1944–45 series there was a tendency for the volume index to be slightly above 1.0 for the first three weeks after the blood loss, suggesting a normal size but a reduced number of red cells, whereas during the second three weeks the index tended to approach or drop below 1.0 suggesting a normal number of a normal or slightly reduced size. The color index in general ran slightly below 1.0 which reflects greater decrease in hemoglobin than in the number of cells.

Serum protein. The serum protein, as measured at weekly intervals, was less affected by the loss of 500 ml. blood than hemoglobin, red cell, or cell volume. One week after the blood loss, the serum protein values, with but one exception, were at least 95 per cent of the donation value and averaged 97.3 per cent for all groups. These rose to approximately donation levels or above by the end of six weeks. The four groups which had daily protein intakes of 90 gm. daily showed slightly higher serum protein values than the groups on intakes of 50 gm. and 75 gm. The differences were not statistically significant.

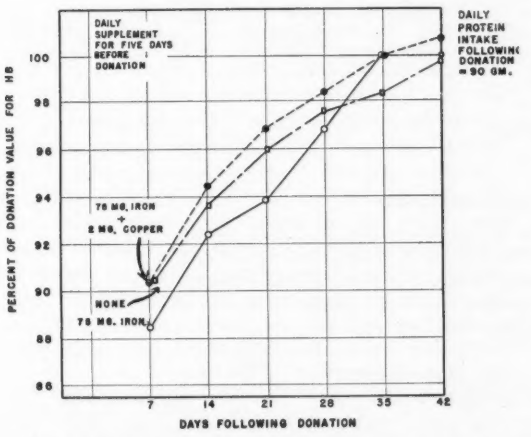

FIG. 3. *Hemoglobin regeneration on a 90-gm. protein intake with and without pre-donation supplements.*

TABLE 4

Comparison of groups which showed significant differences in hemoglobin restoration

GROUPS		DIFFERENCE AND PERCENTAGE ERROR OF DIFFERENCE BETWEEN TWO GROUPS (in % of blood value at time of donation)					
Superior regeneration	Slower regeneration	7 days after donation	14 days after donation	21 days after donation	28 days after donation	35 days after donation	42 days after donation
90 gm. protein	self-chosen	2.0± .739*	6.0± .923	5.6± 1.174	6.8± 1.433	8.9± 1.105	10.0± 1.00
90 gm. protein	50 gm. protein	4.5± .907	7.3± .768	10.1± 1.145	9.5± 1.435	12.0± 1.228	12.7± 1.079
90 gm. protein	50 gm. protein plus iron	3.3± .914	5.0± .919	6.0± 1.076	5.5± 1.431	4.4± 1.157	5.2± .951
90 gm. protein	75 gm. protein	2.8± .948	4.1± .855	4.0± 1.139	5.6± 1.323	6.7± 1.223	8.0± 1.091
90 gm. protein	75 gm. protein plus iron	2.1± .720	3.0± .792	4.0± .989	4.8± 1.309	4.2± 1.100	3.7± .956
50 gm. protein plus iron	50 gm. protein	1.2± 1.031	2.3± .838	4.1± .891	4.0± .950	8.0± 1.047	7.5± .788
Self-chosen plus copper**	self-chosen	2.1± 1.159	3.7± 1.331	2.6± 1.410	1.4± .403	7.4± .831	6.0± .941
Self-chosen plus riboflavin	self-chosen	1.5± .960	3.1± 1.008	1.9± 1.276	3.8± .981	5.9± 1.045	6.1± .982
100 gm. protein prior to donation	nothing prior to donation; self-chosen diet following donation	3.4± .703	4.5± 1.167	4.2± 1.176	5.3± 1.236	7.4± 1.124	5.3± 1.117

* By formula: σ difference of means $= \sqrt{(\sigma M_1)^2 + (\sigma M_2)^2}$

** Group had received additional iron four months previously.

DISCUSSION

The value of these findings lies in their applicability to the treatment of hypochromic anemia whether caused by hemorrhage or by inadequate hemoglobin formation. The findings substantiate the current view that protein and iron are of prime importance in forming hemoglobin and suggest that riboflavin may be helpful also (Table 4).

The best hemoglobin regeneration occurred when the protein intake was 90 gm. daily. Adding iron to this did not improve the regeneration; nor did giving iron, nor iron and copper during five days prior to the blood loss when a protein intake of 90 gm. followed the loss. In all these cases, the hemoglobin values returned to pre-donation values between the fifth and sixth week following the blood loss.

Adding iron to the daily protein intakes of 50 gm. and 75 gm. significantly improved the hemoglobin recovery, but not equal to that on the protein intake of 90 gm.

Each supplement added to the protein intake of 50 gm. improved regeneration above that on the self-chosen, or the controlled, unsupplemented protein intake of 50 gm. The daily supplements were 75 mg. iron, 3 mg. riboflavin, 1 mg. copper (to subjects who four months previously had received additional iron for six weeks) for six weeks following blood loss, and 100 gm. protein for five days prior to blood loss. The recoveries were better than on the protein intake of 75 gm., a fact for which there seems to be no obvious explanation. These results indicate that the usual self-chosen diets containing 50 gm. protein do not supply the essentials for the regeneration of hemoglobin within the six weeks following the loss of 1 pt. blood, which reduces hemoglobin by 12 to 14 per cent. When the post-donation diet furnished only 50 gm. protein, the 100-gm. protein pre-feeding resulted in the most rapid pick-up, but the hemoglobin did not return to pre-donation values by the end of six weeks.

The stimulating effect of iron administration, either oral or intramuscular, on hemoglobin formation is well established. Although this may be the simplest and most generally used hematopoietic agent, the results of these studies suggest it is not the most effective. Pre-feeding with a high-protein (100 gm.) diet for five days or giving 3 mg. riboflavin for six weeks following the blood donations resulted in better hemoglobin recovery than adding 75 mg. iron.

From an expense standpoint, it is cheaper to use iron tablets than to increase the protein intake. From a nutritional standpoint, however, there is no comparison between the nutritive contribution of 40 gm. protein from food and 75 mg. iron from ferrous sulphate.

In order to furnish 90 gm. protein, the daily diet would need to include such foods as: 1 qt. of milk, 1 egg, 2 servings of meat, and 1 serving of cheese or legumes. Some care would be needed to avoid exceeding the individual's caloric requirement. There was a tendency for the girls on the protein intake of 90 gm. to gain weight—not only because of the 410 calories in the protein supplement, but also because they delighted in making it into a "Dagwood" sandwich.

SUMMARY AND CONCLUSIONS

One hundred and twenty-nine studies have been made of blood regeneration in women donors. The rate of recovery of hemoglobin, red cells, and serum protein was determined on three different levels of dietary protein with and without added iron, supplements of copper, supplements of riboflavin, and with supplements of iron and of copper and of protein given prior to blood loss. Poorest recovery occurred on self-chosen and unsupplemented controlled diets which furnished only 50 gm. protein daily. Each of the supplements added to the 50-gm. protein intake improved the rate of hemoglobin recovery. Greatest recovery occurred when the donors received a diet which furnished 90 gm. protein daily for six weeks following the blood donation. The results suggest that diets should furnish at least 90 gm. protein daily when there is need for blood regeneration.

REFERENCES

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(2) TODD, J. C., AND SANFORD, A. H.: Clinical Diagnosis by Laboratory Methods. 8th ed. Philadelphia: W. B. Saunders Co., 1937.

Boston Hotel Accommodations

A letter received the middle of May in the headquarters office of A.D.A., states that the supply of single hotel rooms for the 31st Annual Meeting to be held October 18 through 22 is limited. The Boston Housing Bureau is requesting that wherever possible dietitians planning to attend this meeting make arrangements to double up on hotel accommodations with congenial friends of their choice.

Requests for reservations should be sent to the Housing Bureau, Boston Convention Bureau, 80 Federal Street, Boston 10. A list of hotels suggested by the Convention Bureau appeared on page 316 of the April issue.

Areas of Cooperation Between Medical Social Workers and Dietitians[1]

HALE PRAGOFF

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THERE IS a need for a closer working relationship and understanding between nutritionists and dietitians and medical social workers. Each should be more aware of the functions and methods of the other group in order to recognize areas and situations where increased integration might make the services of each more effective.

Each group often needs the other's help when working with individuals and families with special dietary needs. Joint responsibility for reeducating and adjusting the patient and his entire family, if necessary, to the changed situation caused by his illness can many times bring better results if knowledge of certain of the patient's circumstances is shared. Important to an individual with a dietary problem can be such factors as his individual characteristics, his food tastes, and his religious, cultural, and even emotional problems associated with food. Also involved might be his financial capacity or his family's ability to cooperate, as well as the health of others in the home. The medical social worker, trained to observe and evaluate social data and to relate them to the medical situation, can often strengthen the services of the nutritionist and make her help more meaningful.

QUALIFICATIONS FOR AND FIELD OF MEDICAL SOCIAL WORKERS

The educational preparation for the medical social worker is a two-year graduate professional program leading to the degree of Master of Arts in one of the schools of social work which has an approved curriculum in medical social service. This preparation is planned to give her knowledge regarding health and disease; the role of the emotions and the meaning of behavior in illness; and the relationship and influence of economic and social factors on ill health and disability, as well as an ability to utilize the services of those community resources best suited to the needs of the individual and his family.

A specialized field within the profession of social work, medical social work deals principally with social problems related to illness. Among medical men, there is a growing belief, particularly with the increasing integration of psychiatric concepts with medical theory, that patients can be more satisfactorily restored to health when medical studies and treatment are combined with treatment of unfavorable social and emotional factors.

The medical social worker's function is to practice case work through the study, evaluation, and treatment of social, economic, and emotional factors related to a patient's illness. Working under the leadership of a physician, her immediate aim is to assist the patient to improve or adjust outer or inner pressures, whether arising from disturbing difficulties in his environment or from personal attitudes and feelings. Although the medical social worker needs to have some understanding of the underlying medical problems, her concern is with what the illness does to the patient, how he feels about it, and his capacity to adjust to it. The implications are that there is something within the patient himself, or within his environment that may be contributing to his illness. Such factors can also affect the course of his physical recovery and social functioning.

The medical social worker is a part of the group concerned with the care of the sick—the doctor, often the nurse, the nutritionist or dietitian, or other specialists, both in and out of an institution. The medical social worker, however, has the primary responsibility for recognizing and considering the social aspects of illness. She assists the other specialists to understand social factors which affect that part of care which is their primary concern.

We find the largest number of medical social workers in hospitals, but they are also employed in other agencies, including clinics not attached to hospitals, public welfare agencies extending medical care, and public health departments. They are sometimes employed in voluntary programs for the prevention of blindness and the care of patients with cancer,

[1] Presented at the National Conference of Social Work, April 13–19, 1947, in San Francisco.

tuberculosis, heart disease, and other chronic conditions.

When a need exists for social consideration of a large number of patients, such as in local and state departments of health and welfare, programs of rehabilitation or nation-wide programs, the medical social worker is often used as a consultant. In these positions, she offers help to administrators in relation to the social aspects of their program, fosters effective working relationships with community agencies, and helps other social workers and members of the medical team to understand the social aspects of illness related to medical care. At a federal level, the medical social consultants are employed by the Children's Bureau, the Bureau of Public Assistance, Office of Vocational Rehabilitation, and the U. S. Public Health Service.

WAYS TO ACHIEVE BETTER COOPERATION

Nutritionists, as you know, are not new to social work. They have created a definite place for themselves through their assistance in the practical details of financial planning with families. Despite this, only occasionally have close working relationships been established between them and medical social workers. There are probably several reasons for this, a principal one being the lack of qualified personnel. Many hospitals, sanatoria, and other institutions have no medical social service departments, or they are not adequately staffed. Often, when there is a fairly sufficient number of medical social workers, the coverage of the dietary staff is inadequate. Many welfare organizations function without a nutritionist. In some instances, institutions having a consultant nutritionist can more easily work out this integrated service, for the consultant is apt to be freer from routine daily responsibilities.

More joint thinking, planning, and effort could result from the following:

(a) Inclusion of enough information in the training of each group to create a better understanding and interest in the work of the other profession. Some courses in social work have been made available to students in the schools of home economics, as for instance those at Western Reserve School of Applied Social Science, St. Louis University School of Social Work, Tulane University, and the New York School of Social Work.

(b) More consideration by consultants, from the federal level down, of the effective collaboration possible between medical social consultants and nutritionists. It would seem on a state level that much could be gained from an exchange of ideas concerning both content and organization of the respective programs. Each consultant should have an opportunity to explain the services of the other to agencies in her particular field and to stimulate and encourage more and better use of the other's services. Particularly in maternal and child health and crippled children's programs could certain points be explored by the two consultants concerning the most effective methods of giving consultation. Private agencies, also, could benefit from giving full consideration to this kind of integrated service.

(c) More awareness on the part of the medical social worker of the need for fuller information of the newer knowledge of nutrition.

(d) Training of more personnel.

AREAS WHERE GREATER COOPERATION MIGHT BE POSSIBLE

To medical social workers, the nutritionist and dietitian are a relatively unexplored resource whose skills and knowledge, generally speaking, have not been sufficiently recognized. This is also true of many nutritionists and dietitians in relation to medical social workers. Thus, it is difficult at present to collect data on their cooperative efforts or to see just where the need for better coordination between them might lead. Some areas of their activities, covering both direct and indirect services, where both groups are working together, seem to center around:

(a) Service to patients in hospitals, sanatoria, and other institutions giving care to the convalescent and chronically ill.

(b) Assistance to individuals and families with dietary problems.

(c) Assistance to research in the field of nutrition and medical social work.

(d) Consultation to agencies concerning standards for determining eligibility where there is a "means" test.

(e) Consultation in public health programs.

PROBLEMS OF HOSPITALIZED PATIENTS

The hospital, sanatoria, and other institutions caring for the ill offer a rich opportunity to the medical social worker to cooperate and integrate her services with the dietitian. Closer teamwork between them should result in a more helpful therapeutic experience for the patient.

In many instances the dietitian needs to better understand the patient in his illness, so that she can fit her services to his particular needs and capacities. The medical social worker can offer help in evaluating for her the obstacles that are preventing him from getting all the benefits possible from medical care—whether these are social conditions that need to be altered, material aid which should be obtained, or attitudes that should be changed. Making it possible for some patients to release their tensions and anxieties may be all that is necessary for them to benefit from dietary treatment. For others, the medical social worker should help them, if possible, to relieve their social and emotional difficulties obstructing the carrying out of the doctor's recommendations, including the prescribed diet.

It may be that the patient's difficulty in getting

full benefits from medical care seem to center around food habits. Although food is generally recognized as an important contributing factor for maximum health, many patients in an institution are improperly nourished because of ignorance, indifference, fixed ideas, and prejudices about food. They need to be induced to eat needed foods and with relish, if possible. More information about the patients may help to explain their attitudes about food and their food habits, which may be blocking treatment. Each person acquires some of his attitudes about food from his early childhood experiences, as well as from his environment and associates.

An example of this was seen in a very ill but cooperative patient in a tuberculosis sanatorium. Although it was believed he knew how beneficial the proper food would be to him, his tray regularly came back almost untouched. The dietitian was concerned, for she felt she was doing her best for him. Through the medical social worker, it was found that he and his family had certain food habits which he seemed unable to change. He did not like cream soups, only clear ones. Like his mother, he did not care for as great a variety of food as was served. When he found that he could have a choice of food and that someone was checking his tray and wanted to please him, his objections to what was served lessened and he reacted well.

The assistance of the medical social worker may require several interviews with the patient, and she may also need to contact his family, for their viewpoint or circumstances may have some bearing on his accepting or being able to carry out the recommended diet. It may be necessary to help him make financial arrangements, taking advantage of the community resource best suited to his needs.

EMOTIONAL PROBLEMS AFFECT EATING BEHAVIOR

A tuberculous patient also can be used as an example of one whose circumstances affect his appetite. He is often very disturbed over having to leave his family, his home, and the activities of a work-a-day world for an artificial existence in a sanatorium. He may fear loss of status in his home or in the community as a wage earner or worry over his inability to maintain a home. The dietitian may plan a nutritive diet, but if the patient is disturbed emotionally, the food may not be well digested or utilized. A patient's refusal to eat is often a symptom of underlying trouble. The medical social worker should be able to offer assistance in looking beneath the surface for the real meaning.

The following case illustrates how the patient's reaction to food was caused by a disturbing situation. In addition, it illustrates teamwork between the nutritionist and the medical social worker.

Helen S. was referred to the medical social worker in a hospital by the dietitian who had been instructed to give the patient a high caloric, high-vitamin diet, suitable for an adolescent with the diagnosis of anorexia nervosa. The dietitian reported that Helen would not eat in the hospital and her mother said that she had often refused to do so at home. The medical social worker found through interviewing the child, her parents, and others, that Helen was the only child of a German-born father who was employed irregularly in a local night club as a bartender. He came home at irregular hours, often very intoxicated. He was cruel to the child and mother at these times, often beating and kicking them. The mother, who was a former waitress in a night club, reacted to the treatment by leaving home and going to the home of a friend, who was known to entertain the night club patrons. Often the child did not see either parent for several days at a time. Both parents attempted to compensate for their behavior by taking the child out to dinner, at which times they drank heavily and ate heartily. The only effective way this child could react to rejection and insecurity was the refusal of the food offered.

The medical social worker, after consultation with the doctor and the dietitian and several conferences with the mother and child, referred this case to child welfare, where a companionable foster home was found for the child. Only then would the child consider eating anything except those foods that were forced upon her. After intensive psychotherapy, a change in environment in a foster home, vitamin and diet therapy, she began to eat a mixed, well balanced diet. At the end of a year she had gained 15 lb. At that time she was doing well in school and commencing to participate in school activities. However, when emotionally upset by disappointment in school or social contacts, she found it hard to eat. In general, it may be said that she responded intelligently to suggestions made in regard to what to eat at home and in the school cafeteria after she realized there were people who were genuinely interested in her and in helping her to work out her problems of living satisfactorily.

As work with the aged, who not only "eat to live, but live to eat," is becoming an increasingly important problem, a word might be said about the help the medical social worker can give the nutritionist with this group. The medical social worker's skill can be used to obtain information about the aged who have memory difficulties and dwell on their younger life. Giving these patients the best possible nutrition, within their eating pattern, can involve finding out such factors as whether they lived in a city or in the country or just what their previous life was, for this may be reflected in their interests and desires for food. The medical social worker can offer help in evaluating this group.

SITUATIONS AFFECTING DISCHARGED PATIENTS

Patients to be discharged from institutions often need the cooperative assistance of both groups. The

medical social worker can be of help in these situations by giving the nutritionist information about the patient's home conditions and the capacity of the family to understand the patient's needs and to cooperate. If the patient is a terminal case or one with a chronic illness who has been out of the home for a long time, the medical social worker may need to work with the family so that the recommended medical treatment can be followed, including the prescribed diet. The following case shows how both groups cooperated with a discharged patient.

A hospital patient with paralysis agitans was about to be discharged. Her case was brought to the attention of the social service department because she was upset and her crippled condition made it difficult for her to continue to manage her own household. She said she wanted to do this for it gave her something to do and also made her feel less different in her disability. Also, she believed it was physically good for her. The medical social worker, with the dietitian's help, wrote out a schedule of the day's activities for the patient.

In helping the institutional patient to work out the social and emotional aspects of his situation which seem to prevent him from obtaining maximum benefits from treatment, not only will the medical social worker on some cases cooperate with the dietitian, but also with the community nutritionist, to whom referral may be made for a number of reasons. One might be so that a better diet can be arranged for the patient's family. It may be that the patient's dietary pattern indicates the need for teaching of better food habits or advice about special foods. Counsel may be needed about problems relating to home management, including the budget or some help regarding clothing. The nutritionist's assistance may include obtaining the services of a visiting housekeeper. Sometimes in the school, the foods teacher has duplicated certain recommended dietaries through the school cooking class or supplemented a child's diet through use of the school lunch program. It may be the home demonstration agent can give needed help through a lecture course.

PATIENTS WITH DIETARY PROBLEMS

The patient's food habits, as we know, are the result of not only food experiences of his early months of life, but also of his later environment. Many times when a patient is on a special diet and presents eating problems, it will be necessary to go back to his childhood to find the cause of the trouble, and this first must be improved, if possible. As previously noted, if a child expresses resentment toward her parents by refusing to eat, the resentment must be handled before eating can be improved. Gross dietary violations may be explained by conflicts with parents, where the patient has strong emotional attachments. Temper outbursts, because the diet creates tension, may show strong infantile tendencies. Many obese patients have problems relating to insecurity. Help may be needed in getting the patient to accept and to recognize the importance of the diet.

Children, of course, cannot always be made to realize the importance of a diet. Experience has shown that the environmental factors should be so arranged as to make the diet of the child as easy and as socially acceptable as possible. This may mean that the medical social worker and the nutritionist need to work together so that the mother will better understand how important it is that the diet does not make the child, in comparison to other children, feel different. Also, the mother may need help so as not to become too protective of the child because of his unusual situation.

REFERRAL AS AN AVENUE OF MUTUAL AID

The services of both the medical social worker and the nutritionist are not always available together. The help of a nutritionist may need to be obtained through referral. The medical social worker will interpret certain needs to the social worker in welfare and private agencies, who in turn will work with the nutritionist. This method of operation is seen in the case of Mrs. T., who was a small, anemic-appearing woman of about sixty-six years of age. She came to the out-patient service of a hospital because she had chronic constipation. The doctor referred the case to the medical social worker because the patient stated that on her old age assistance allowance she could not purchase the meats, fruits, and vegetables recommended for her.

The medical social worker obtained the following information from the patient: Mrs. T., following her husband's death, had broken up her home and moved to a one-room apartment where her only cooking facility consisted of a small, two-burner electric plate. She had been in the habit of having tea and English muffins for breakfast at about mid-morning; canned soup in the middle of the afternoon; and a soft cooked egg or cooked cereal with milk, bread, cup cake, and a cup of tea for supper. Only occasionally did she eat meat, fruits, and vegetables which the doctor had recommended. The only complete meals she ate were on Sundays, when one of the church women invited her for dinner, or when she and one of the other women in the house would pool their resources and cook a meal. She told the medical social worker that her husband had always bought the groceries and helped cook the meals because she had not particularly enjoyed doing these things. Now that he was gone, she found it hard to market on an old age assistance allowance and have the things he had always bought. She also stated that she would almost rather not eat than eat alone.

The medical social worker told the patient how much the nutritionist in welfare could help her, and the patient decided to ask for such assistance through the social worker in this agency servicing the case.

The medical social worker explained the patient's situation and the medical recommendations to the social worker and to the nutritionist, who helped arrange for three of the women in the home to cook and eat dinner together. The other meals could be eaten together or not, as they chose. Mrs. T. and the nutritionist planned low-cost menus, prepared shopping lists for low-cost fresh vegetables and fruits, and made food lists suitable for one person. Also, they discussed how to modify these to include three people. Ways were worked out to prepare adequate, well balanced, attractive meals with Mrs. T.'s limited cooking facilities.

Within three months Mrs. T. had gained a small amount of weight, had controlled the constipation difficulty, and stated when she returned to the clinic that she felt so full of pep that she would like to have something to do to occupy her time. The medical social worker, through the occupational therapy department of the hospital, arranged for some part-time home sewing. This helped to supplement Mrs. T.'s income and to increase her sense of usefulness.

RESEARCH WORK

In the field of research, the skills and abilities of each group can be helpful to the other. Dr. Icie Macy Hoobler, Director of the Research Laboratory of the Children's Fund of Michigan, which has as one of its major undertakings the study of the chemistry of nutrition, has said: "In our studies with mothers and children, we have leaned heavily on social workers to guide us in many of the problems of selecting, observing, and handling our experimental subjects.

"In one of our studies that extended over years of time where children were given a few simple foods known to be good for them, the medical social workers criticized us severely for restricting the diets (although given a few simple foods, the imaginative dietitians and nutritionists could serve menus for a month without repeating a single meal). They argued that we might be taking care of the principal physiological needs, but at the same time set up complexes that would distort the life of the child. We accepted the full responsibility but invited the assistance of those dealing with mental problems to observe the children. This they did and from time to time we received helpful and reassuring reports that the experimental conditions to which the children were subjected did not disturb them emotionally and that the children progressed satisfactorily both physically and mentally under the experimental regime. I consider this one of the most valuable contributions made by our studies on the nutritional and chemical growth in childhood."

BUDGET PLANNING FOR RELIEF FAMILIES

A great deal of thought has been given to the need for adequate relief on a planned basis. It is felt that this would probably assure an adequate, decent, healthful standard of living, and that the opportunity to express extenuating social factors would permit individualization of the family. In giving consideration to total family needs, the budget becomes a very serviceable tool of case work, and the case worker has an intelligent basis for estimating the needs of the dependent family.

In developing a budget, the services of nutritionists have been of special value to social agencies. Their knowledge of the standard cost of living and their skills have been used in the preparation of minimum adequate standards. They also have handled revisions, applying local costs to goods and services. Also, in connection with carrying out the budget, they have advised as to the uses of new or substitute foods and counseled with workers and families regarding food, clothing, and housing problems.

An integrated service between these two groups, which resulted in benefit to both of them and to the program was that of the medical social workers in the City of New York Department of Health who conferred with the New York City Budget Council in developing budgetary standards to be used as a guide in estimating family expenses in cases involving physically handicapped children.

A budget guide was devised to be used by cooperating hospitals which allowed for a decent standard of living and the consideration of extenuating social factors, permitting individualization of each family. Also, a family assessment was to be made at the time of medical care. The guide was developed through the aid of the New York Budget Council, composed of a group of nutritionists working in private and public agencies, and the medical social workers in the program for physically handicapped children. They met often during the development of the guide, and since then, to keep the budget on a current basis.

The two groups felt that many benefits resulted from this experience. The medical social consultants were impressed with the technical knowledge of the nutritionist and her practical help. The project clearly pointed out how the nutritionist could be used as a consultant to the medical social worker in the total care of the child.

The nutritionists, whose skills to date have for the most part been used by social workers in public assistance programs, which of necessity are sometimes restrictive, in turn felt they had gained from the broader philosophy this medical care program presented. They believed through this they had an increased understanding of the emotional component in illness and of the meaning to a family of long-term illness. It was meaningful to them to know that attitudes, feelings, and *mores* of individual families were considered as an integral part of the total family situation, which relates itself to financial assistance.

Also, they were interested in the responsibility the health departments assumed in the total medical needs of this handicapped group.

ACTIVITIES IN PUBLIC HEALTH DEPARTMENTS

Health departments are employing nutritionists and medical social workers in increasing number. The function of each is to serve as a consultant, or in some instances, in the absence of other facilities, to give direct service to individuals seeking care. The health departments' medical care programs may be provided by a large number of doctors, hospitals, clinics, and convalescent homes. Assistance may be given to venereal, tuberculous, and cancerous patients, often to crippled children under the Social Security Act, and to those who come under maternal and child health services. Social factors or needs that prevent individuals and groups from being able to make effective use of these programs are one of the chief concerns of the medical social worker. As patients' situations often have a related nutritional component, more joint thinking and planning between the medical social worker and the nutritionist could make their services more effective.

One of the principal responsibilities of the medical social worker acting as a consultant to a health department is to assist with plans for closer cooperation between her department and state and welfare agencies. This means she will bring to welfare and social agencies, whether official or non-official, a continuing explanation of the policies and program of the health department and its services. Cooperation between the two health department workers should insure the medical social consultant having essential nutrition knowledge.

The medical social consultant, when working with welfare divisions and agencies which have no nutritionist, can often pave the way for the use of the nutritionist's services, especially in welfare's in-service training programs. The medical social worker here might assist the nutritionist in reviewing family situations and in increasing her understanding of social and emotional factors as they affect the health and nutrition of an individual. Welfare may need help toward a better understanding of certain health problems, including nutritional data, in order to be able to respond more promptly and effectively to requests from the health agency.

Also, the medical social worker can encourage the use of nutrition consultants' help to aid convalescent homes in improving their food service. Likewise, she can urge institutions caring for handicapped children and for those suffering from rheumatic fever and tuberculosis to seek consultation on nutrition.

Serving in her liaison capacity, the medical social worker also brings to the health department and its staff an increased understanding of the services available through other social agencies. This should help the nutritionist in the development of her program. Often the recommendations the nutritionist might make, for example, in a child health conference or through the school health program, will not be enough if financial help cannot be obtained.

The effectiveness of public health instruction for children, including nutrition, is dependent to a great extent upon the approach to and receptiveness of the mothers. Although the nutritionist has had some training in the techniques of interviewing, the medical social worker no doubt could help her when working with "uncooperative," "demanding," and "unreasonable" families.

CLINIC WORK

The medical social worker in a health department also counsels and advises with local health units and public health nurses, attempting to increase their awareness of social factors pertaining to the patients' illnesses. The opportunity here for applying the social worker's knowledge is offered through such media as the maternity clinic, the child health conference, the crippled children's clinic, the school health service, the pediatric clinic, and the home visit of the public health nurse. An increased understanding of an individual's social problem as related to his illness helps the nurse to have a keener appreciation of individuality in health instruction, including nutrition.

In the clinics mentioned above, the medical social worker can help to point out the inter-relationship of medical, social, and nutritional factors and may often use the nutritionist's services. An example of this might be the cooperation necessary in helping a crippled child. Joint consideration by the medical social worker and the nutritionist of repeated community needs shown in these clinics and conferences might result in an extension of visiting housekeeping service or ways of overcoming dietary deficiencies. The latter might show that increased interpretation to welfare agencies is needed for more adequate budgets for such groups as the tuberculous and diabetic. Demonstrations by the nutritionist and medical social worker in these clinics or through special classes could well point out the benefits of more integrated teamwork. An example might be a rheumatic fever clinic. Improvement in diet with this group could be related to many social problems. For instance, there is the problem of handling, in a substandard income home, the diet of a rheumatic child without creating feelings of deprivation and envy among his siblings, who also would like fresh fruit, milk, eggs, and vegetables.

There are undoubtedly other areas where medical social workers and nutritionists are cooperating. At this point in the development of both professions cooperation has only begun. No doubt as needs become more apparent, better integration for improved service to the patient will follow.

Dietary Practices vs. Food Expenditures in Families Receiving Public Assistance[1]

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THIS study was initiated at the request of the Division of Public Assistance of the State of Wisconsin Department of Public Welfare for the purpose of determining the degree of adequacy of the grants to families receiving "Aid to Dependent Children" and to learn wherein the budgets needed readjustment. This report deals with the quality of the diets of these families and their pattern of food expenditures.

PROCEDURE

The sample was taken from the 384 families in Dane County who, in May, 1946, were receiving public assistance from the Aid to Dependent Children program. Cards used in keeping records were sorted so that families were classified according to locality and the number of children for whom aid was received. The latter classification was made in order to include samples of all sizes of family or household. No farm families were included, because of the irregularity of farm income and the effect that home production has on the family expenditures for food. All other cases were divided into three groups: large urban, small urban, and village.

Since the goal was to obtain expenditure records from approximately 50 families, 74 cases were drawn from the sorted cards, dividing them about equally between large urban, and small urban and village combined. From this total, 42 usable records were secured, 32 of which were for a period of three months and the other 10 for either one or two months.

The families were contacted four times during the first week of the study—twice by letter and twice by personal visits. The following week, a third visit was made, and thereafter contact was maintained by weekly visits. An inventory of food on hand was taken at the first and last visit.

The data on food purchases and consumption were studied in detail. The total amount of each item of food consumed by the family was determined from the records of foods purchased, garden produce, gifts, and inventories. The nutritive value of food was calculated per pound of food as purchased, using the food composition tables prepared by the Bureau of Human Nutrition and Home Economics in cooperation with the National Research Council (1).

The dietary needs of each family were calculated from the National Research Council's recommended allowances (2), making adjustments for guests and for absences of family members. The results of these two calculations were compared and the difference between them expressed as percentage deviation above or below the recommended allowance for each nutrient for each family.

For convenience of discussion, the families have been grouped as follows:

Group A—those families meeting recommended allowances for all nutrients.

Group B—those families not more than 10 per cent below the recommended allowances in any nutrient.

Group C—those families not more than 30 per cent below the recommended allowances in any nutrient.

Group D—those families more than 30 per cent below the recommended allowances in one or more nutrients.

Group E—those families already included in Group D, but who had diets more than 30 per cent below recommended allowances in four or more nutrients.

It has been pointed out by Wilder (3) that the allowances provide a factor of safety of approximately 30 per cent for persons who have an average or less than average requirement.

In order to put all families on a comparable basis for the study of food expenditures, family size was expressed in adult male units (hereafter referred to as

[1] The data in this paper were taken from the thesis of Margaret Strauss née Dickson, submitted in partial fulfillment of the requirements for the degree of Master of Science. Part of the data was reported at the meeting of the American Home Economics Association in June, 1947, in St. Louis. The investigation received financial support from the Division of Public Assistance of the State of Wisconsin Department of Public Welfare.

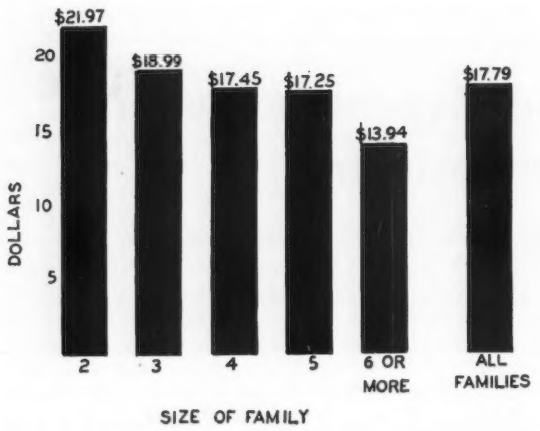

FIG. 1. *Distribution of families with reference to consumption of various nutrients. Each bar represents all of the forty-two families.*

A.M.U.). For example, according to the scale used (4), a man twenty years of age or over, employed full-time, constituted 1 A.M.U.; a woman, moderately active, 0.82 A.M.U.; a child under two, 0.48 A.M.U., and a boy sixteen but less than twenty, 1.02 A.M.U. A mother and a child less than two would be equivalent to 1.3 A.M.U. The total A.M.U. per family was adjusted for absences of family members and for guests. Food expenditures were calculated to include the monetary value of garden produce, gifts, and food on hand, as well as food purchased during the period.

RESULTS AND DISCUSSION

Analysis of the data on food consumption and comparison of these data with the recommended allowances gave the following results: of the 42 families, 3 met the recommended allowances in all respects (Group A); 5 others were not more than 10 per cent below in any factor (Group B); 14 were more than 10 per cent but not more than 30 per cent below the recommended allowances in any factor (Group C); and 20 were more than 30 per cent below the recommended allowances in at least one factor (Group D); of Group D, 14 families were more than 30 per cent below the recommended allowances in four or more factors (Group E). Four families were 50 per cent or more below the recommended allowances in one nutrient. One family was 50 per cent or more below the recommended allowances in four nutrients.

The distribution of the forty-two families with reference to their consumption of the different nutrients is shown in Figure 1. The recommended allowances for niacin were met by the largest number of families, with thiamine, vitamin A, and ascorbic acid next in order. Only seven families met the recommended allowances for total calories and nine for calcium. Sixteen of the families showed an intake of more than 30 per cent below the calcium allowance. That a diet low in one factor is very likely to be low in others is shown by the fact that only two families had an intake below the recommended allowances of only one factor while ten families had an intake below the recommended allowances in all factors.

It is interesting to note that the vitamins appear to have been provided more liberally in these diets

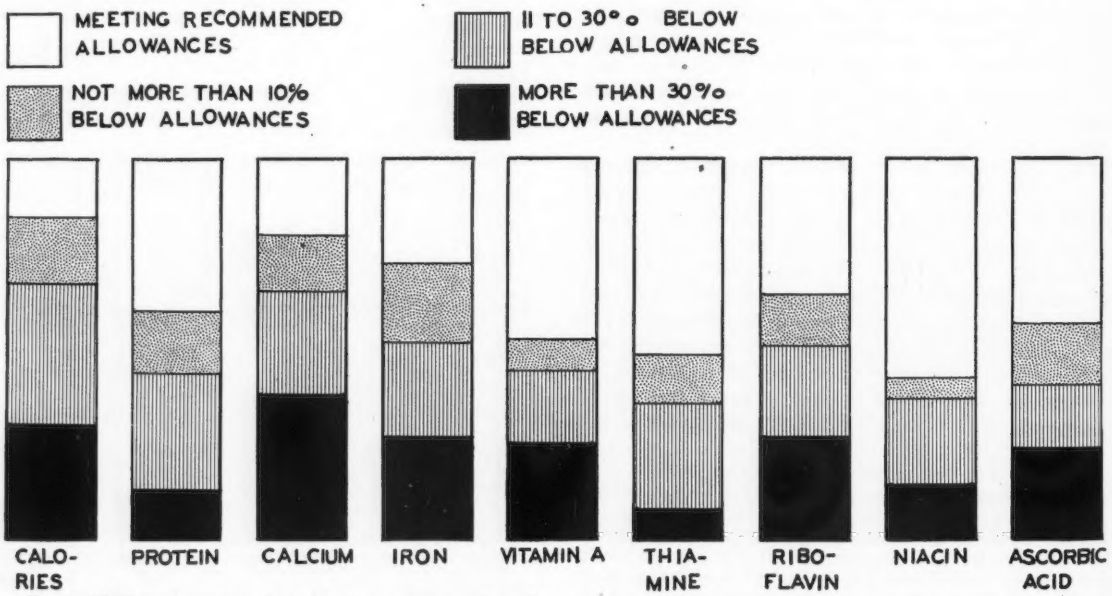

FIG 2. *Median percentage deviation from recommended allowances for each nutrient, arranged according to family size as calculated in A.M.U.'s.*

than the other nutrients. The usual concern of the lay public with regard to the diet has to do with vitamins. These results indicate that the vitamin supply is least likely to be inadequate. It should be pointed out here that enriched bread, and in some families peanut butter, furnished important amounts of niacin and thiamine. The low riboflavin intake of many families can be attributed very largely to low milk consumption.

None of the families of more than four members was in Groups A and B. All but one of the ten families with six or more members were in Group D, i.e. had diets in which one or more nutrients was furnished in an amount more than 30 per cent below the recommended allowances. Six of those families were in Group E, having diets in which four factors were more than 30 per cent below the recommended allowances. The unfortunate position of the large families is further shown in Figure 2 in which the median per cent deviation from the recommended allowances appears. Among families of six of more members, the median deviation ranges from −15 per cent for niacin to −44 per cent in the case of calcium.

Expenditures for food per month per A.M.U. ranged from $10.04 to $26.04 with an average of $17.79 for all families. The average amount per A.M.U. spent for food by families of different sizes is shown in Figure 3. The average expenditure per A.M.U. per month by two-member families was $21.97, while the families of six or more spent only $13.94 per A.M.U. However, reference to Figure 2 reminds us that the large families had diets which to a greater degree fell short of the recommended allowances. The family that had a diet 50 per cent or more below the recommended allowances in four nutrients consisted of seven members and spent $11.17 per A.M.U. per month.

The average food expenditure per A.M.U. per month for each of the groups, representing a different quality of diet is shown in Table 1. A study of this table reveals a direct correlation between quality of the diet and amount spent for food. It will be noted

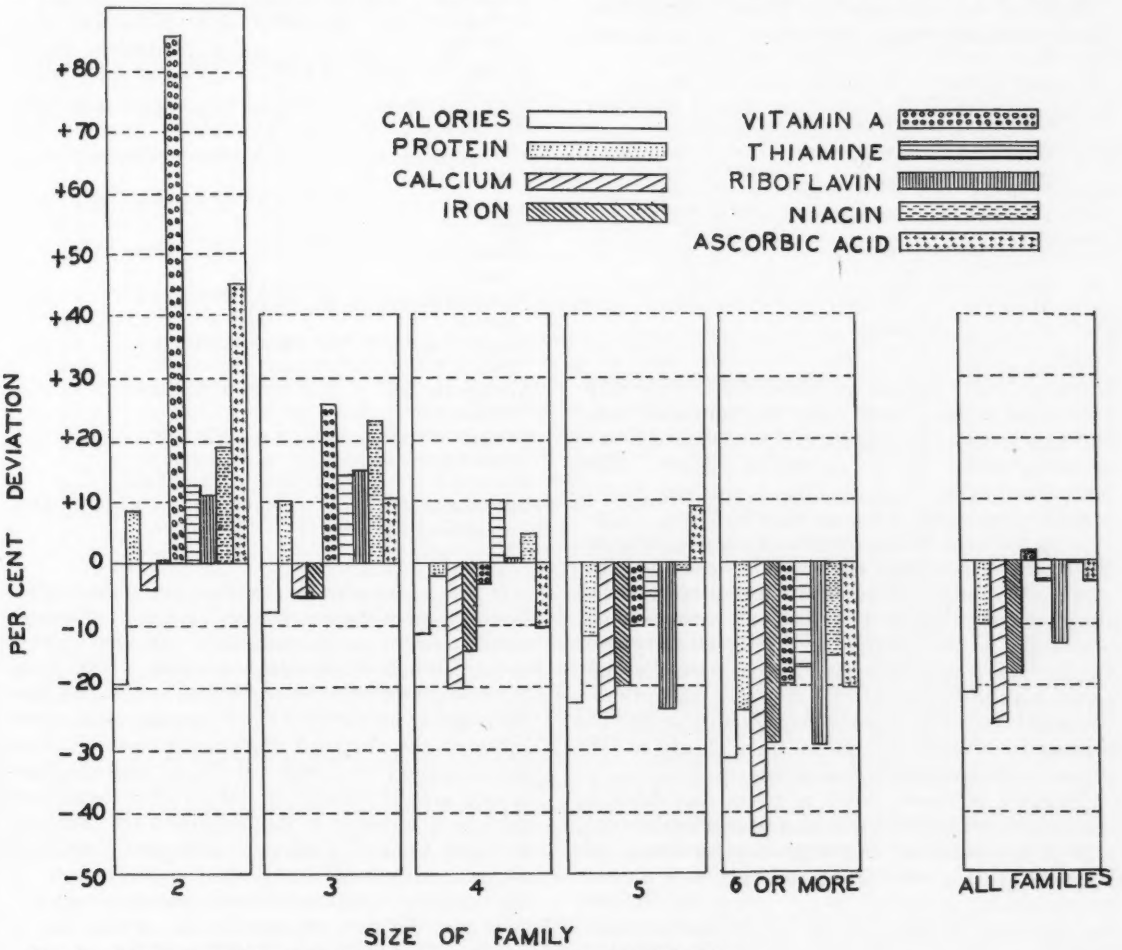

FIG. 3. *Average expenditures per A.M.U. per month for different sized families.*

that Group A spent $25.51 per A.M.U. per month while the fourteen families in Group E averaged only $13.59 per A.M.U. per month.

Correlation between expenditure per A.M.U. and deviation of each factor from recommended allowances was worked out by means of scatter graphs. The correlation coefficients were high between expenditures and adequacy of each of the nutrients. The correlation coefficients ranged from 0.72 to 0.51 in the following order: for iron, 0.72; for calories, 0.70; for riboflavin, 0.70; for niacin, 0.67; for calcium, 0.64; for vitamin A, 0.61; for protein, 0.58; for thiamine, 0.57; and for ascorbic acid, 0.51.

The distribution of the food expenditures among five different food groups is shown in Table 2, as the average of all families, as the averages of families classified according to size of family, and according to the quality of the diet. This distribution of the food dollar is compared with that proposed by Stiebeling and Ward (5), revised by Cowles (6) with reference to current food prices at the time of the study.

Study of data presented in Table 2 shows that the average percentage expenditure for milk and cheese and for fruits and vegetables was considerably below that recommended, while that for meats, fish, and eggs and for fats, sugars, and miscellaneous was somewhat above the recommended pattern. The percentage expenditure for the bread and cereal group is comparable to the recommendations. There appears to be no effect of family size or of quality of the diet on expenditure pattern. For example, the average percentage division of expenditure for the three families in Group A, who met all recommended allowances, is very similar to that of all forty-two families and correspondingly different from the suggested expenditure pattern. However, these families might have obtained the same quality of diet at a lower cost, had they adhered more closely to the suggested division of the food dollar.

Selection of foods within a group may have a marked effect on the validity of a recommended pattern of expenditures. Although the percentage of expenditures for meat, fish, and eggs was almost twice that recommended, 60 per cent of the families had an intake of protein below the recommended allowances. This may be explained by the fact that the families purchased the more expensive cuts of meat and made little use of the economical stew meats and organs. Accompanying the relatively small percentage spent for fruits and vegetables was also an excessive purchase of the more expensive varieties from which the nutritive value is derived at a heavy cost. The relatively small percentage spent for milk and cheese is reflected logically in intakes of calcium and riboflavin below the recommended allowances in a large percentage of families.

TABLE 1

Average expenditures of families per A.M.U., per month grouped according to the quality of the diet

GROUP	NUMBER OF FAMILIES	AVERAGE EXPENDITURE
		A.M.U./month
A	3	$25.51
B	5	21.99
C	14	19.03
D	20	14.46
E	14	13.59

TABLE 2

Distribution of food expenditures, according to quality of diet and size of family

GROUP	NUMBER OF FAMILIES	EXPENDITURE FOR MILK AND CHEESE	EXPENDITURE FOR FRUITS AND VEGETABLES	EXPENDITURE FOR LEAN MEAT, FISH, AND EGGS	EXPENDITURE FOR BREAD, FLOUR, AND CEREALS	EXPENDITURE FOR FATS, SUGARS, AND MISCELLANEOUS
		%	%	%	%	%
Average for all families	42	19.3	22.5	27.9	12.2	17.9
Average for Group A	3	20.5	22.5	28.2	10.3	17.9
Average for Group B	5	25.0	25.8	21.0	11.6	16.4
Average for Group C	14	19.4	24.1	27.7	11.7	16.5
Average for Group D	20	17.6	20.5	29.8	13.1	18.9
Average for families of 2	7	19.8	28.2	28.9	8.2	16.9
Average for families of 3	9	21.1	20.4	29.2	12.3	16.9
Average for families of 4	9	22.0	21.4	26.6	11.4	18.4
Average for families of 5	7	18.2	23.9	26.8	13.1	17.6
Average for families of 6 or more	10	16.9	20.4	28.1	15.3	19.1
Recommended division (5, 6)		32.0	27.0	15.0	13.0	13.0

It was no surprise to find that the dietary practices of most of these families fell far short of recommendations for an adequate diet. Dietary surveys of families and of individuals covering a wide range of incomes and of food expenditures have shown that the consumption of diets below recommended allowances of the National Research Council is wide spread in the United States and is not limited to low-income and relief families. Many of these surveys have been reviewed in the bulletin of the National Research Council, *Inadequate Diets and Nutritional Deficiencies in the United States* (7), which states in the summary: "All the evidence from numerous surveys over the past ten years to the present among persons of all ages in many localities is without excep-

tion in complete agreement that inadequate diets are widespread in the nation."

Stiebeling *et al.* (8) in 1942 concluded from the results of an extensive study that "diets of urban families with low incomes showed a tendency to be short in niacin, calcium, and energy as well as riboflavin." She reported that, in general, large families had poorer diets than small families, and families having larger expenditures for food had better diets. These findings are in agreement with our own. Studies of families receiving public assistance reported by Cowles (9) in Forest County, Wisconsin; by Morgan (10) in Rockford, Illinois; by Okey and Luck (11) in Alameda County, California; and by Potgieter (12) in Hawaii show equally poor food selection in all of these different sections of the country. Okey and Luck point out (11) that "when the average family receives a grocery order barely large enough to purchase an adequate, carefully planned food allowance, the food chosen cannot be expected to fulfill all requirements of the normal diet."

The findings of this study contributed materially to the decision by the Division of Public Assistance to increase all food budgets 20 per cent. Suggestions by the authors for further improvement included an additional increase in allowance to the larger families and a program of nutrition education for all families receiving public assistance.

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Improved Absorption of Vitamin A in New Preparation

Although very little vitamin A is absorbed by normal infants from the oily solutions, such as cod-liver oil, it is efficiently taken up by the blood from a water solution, according to a paper given by Drs. Albert E. Sodel, Lottie Besman, and Benjamin Kramer at the meeting of the Federation of American Societies for Experimental Biology in Atlantic City on May 17. In addition, their investigation showed that even in older children and adults, where vitamin A in oily solutions is absorbed, there was a four-to-eight-fold improvement in absorption when the water solution was used.

Poor absorption of vitamin A from oily solution is found not only in normal infants, but in dealing with other medical problems. In many diseases, such as celiac disease, pancreatic fibrosis, sprue, a block in the bile ducts, and cretinism, it has been observed that there is very little if any absorption of vitamin A compared to a normal individual when it is taken in oil. In some children with these diseases, in spite of large intakes of vitamin A in oil, obvious symptoms of vitamin A deficiency were still found. Therefore, the problem arose as to how such children could be given vitamin A so that it would be absorbed into the blood in sufficient amounts to supply the body with an adequate amount.

One method suggested was a preparation of vitamin A in water instead of in oil. Such a preparation was provided, and Drs. Sobel, Besman, and Kramer fed it to children who absorbed vitamin A in oil poorly. To determine the extent of absorption, the amount of vitamin A in the blood before and after the administration of the preparation was determined. In all cases, a much better absorption of vitamin A was obtained from the water solution as indicated by much higher blood levels of the vitamin.

To determine, in addition, the amount of vitamin A stored in the liver, a study with white rats was undertaken. The vitamin A content of the rats' livers was more than three times as high in groups fed the vitamin A dissolved in water as compared to litter mates given the same amount of vitamin A in oil.

Since there exists a world shortage of vitamin A, a water solution of the vitamin affords an economical means of administering it, for less vitamin A is needed to obtain the same degree of absorption.

Nutritional Status of Children

VII. Hemoglobin[1]

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OF ALL the biochemical measures available for assessing nutritional condition, hemoglobin concentration in the blood has been used most frequently. The occurrence of iron as a component of the hemoglobin molecule and the occurrence of iron-deficient anemias when iron and copper intakes are restricted has led to the use of hemoglobin determinations to assess adequacy of iron allowance (1–7). However, many dietary factors, such as other minerals, amino acids, and vitamins, are required simultaneously to maintain normal function of the hematopoietic system (8). Thus, hemoglobin concentration is a valuable indicator of adequate nutrition with respect to many, rather than to a single nutriment and is a most useful method of assessing dietary adequacy of groups despite the fact that individual cases of anemia may often be the result of some pathological process unrelated to a deficiency in intake.

Study of healthy individuals has revealed that a wide normal range of hemoglobin levels exists and that establishing a definite level below which a value can be considered pathologic is virtually impossible (9–13). Guest (14) found infants to have a high mean level of hemoglobin from birth to ten days, 19.0 gm. per 100 cc. At two months of age, the mean was only 12.1 gm., and at one year of age the mean hemoglobin level had fallen to 11.0 gm. per 100 cc. Thereafter, the mean hemoglobin level increased. Mugrage and Andresen (12) found an increase in mean hemoglobin values for boys and girls from 11.6 gm. per 100 cc. at one, to one and one half years to 14.5 gm. per 100 cc. in the twelfth or thirteenth year. Thirteen years is the age at which hemoglobin values for males and females begin to diverge, with girls maintaining relatively constant levels into womanhood. In boys, hemoglobin continues to increase, reaching a mean level of 16.6 gm. per 100 cc. at ages of seventeen to nineteen years (15). Mack and associates (16) observed a similar increase with age. Loss of blood during menstrual periods may be a significant factor in hemoglobin values being lower for adult women than for men. Endocrine factors are also operative in establishing the difference in hemoglobin levels between males and females after puberty, as was demonstrated by Crafts (17) in studies of the effects of castration and male sex hormones on hemopoiesis in the adult rat.

In addition to age and sex, the methods used in determining hemoglobin must be considered in interpretation and comparison of results, for some methods consistently give higher values than others. A paper from this laboratory (18) first presented data showing that the average hemoglobin levels of white infants between the ages of four and twelve months are from 0.5 to 1.0 gm. per 100 cc. of blood higher than those of Negro babies of similar ages, a racial characteristic which has been confirmed (19,20).

Seasonal variations in hemoglobin also have been studied. Platt and Freeman (21) observed a fall in the hemoglobin of children in the winter, corresponding to the time of greatest incidence of upper respiratory infections and of slowest growth. Maxfield, Bazett, and Chambers (22) observed an increase of 11.5 to 33.7 per cent in spring with warm weather.

There is in any individual also a considerable range within which hemoglobin normally fluctuates from day to day, at various times in a single day, and depending upon the person's being in a recumbent or upright position (23). Short (24) found as much as 17 per cent variation in blood hemoglobin concentration during periods of 8 hr. Somewhat lower variations were observed by McCarthy and Van Slyke (25) to occur daily. Recently, Brown and Goodall (26) have stated that diurnal hemoglobin levels in individuals from 9 a.m. to 6 p.m.

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vary on the average of 0.54 gm. with maximum variation of 1 gm. per 100 cc. Individuals also show variations from day to day averaging 0.93 gm. with maximum variation of as much as 2 gm. Kenyon and Macy (23) illustrated emotional factors which may operate in producing considerable diurnal variation of hemoglobin level. Exercise alone may produce as much as 12 per cent increase in hemoglobin concentration according to Walters (27) and Schneider and Crampton (28). Walters found that the hemoglobin level is lower when the body is recumbent, presumably owing to either an increase in plasma volume or to a redistribution of cells in the circulatory tract during rest. Epinephrine injection and exercise tend to raise hemoglobin level, in part through contraction of the spleen and release of additional red blood cells (29).

METHODS

Preceding papers in this series have discussed the evaluation of nutritional status, the organization of the investigation, the five groups of children who were subjects of the studies, and the methods of collecting and preparing the fasting samples of blood (30).

In blood from 392 children two to eighteen years old, 155 of whom were studied both in the fall and in the spring, hemoglobin was determined by the alkaline method developed by Bessey and Lowry (31). Ten cu. mm. of fresh, whole blood were placed in 4 cc. of 0.5 per cent solution of concentrated ammonia. The resulting color intensity at a wave length of 540 microns was measured in a Beckman spectrophotometer. To calibrate the microspectrophotometric method, venous blood was analyzed by the Van Slyke manometric technique for determining hemoglobin through estimation of oxygen capacity (32), and the results were compared with spectrophotometer extinction readings for blood obtained simultaneously from a finger puncture. From the values, a calibration factor was calculated for converting spectrophotometer extinction readings to grams of hemoglobin per 100 cc.

RESULTS AND DISCUSSION

The level below which hemoglobin can be considered to indicate some degree of deficiency is not well defined in spite of the extensive surveys of populations. Such a variety of factors operate to influence hemoglobin level that no standard is satisfactory for all individuals in a mixed group. Since samples collected shortly after rising and before breakfast were used in the present study, variations in results from the effects of posture, excitement, diurnal variation, and other factors are believed to have been reduced.

Various standards of normalcy have been used by workers who have determined hemoglobin in assessing nutritional state. In Pennsylvania communities, Mack *et al.* (16) have demonstrated that children from economically privileged areas tend to have higher hemoglobin levels than those from economically depressed areas. Their data suggest that 13 gm. per 100 cc. is a desirable hemoglobin level for children and that a value below 12 gm. in a child over six years of age is definitely low. In studies of children six to eighteen years old in Florida, Abbott, Townsend, and Ahmann (33) used the following criteria: 13.6 gm. per 100 cc., normal; 11.4 to 13.6 gm. per 100 cc., subnormal; 3.6 to 11.4 gm. per 100 cc., anemia. Metcoff *et al.* (34), in surveys of nutrition of Newfoundland children ten to fourteen years old, used 12.0 gm. of hemoglobin per 100 cc. as the level indicative of normal condition. Moderate and slight anemia were diagnosed for levels of 10.1 to 12.0 gm. per 100 cc., and con-

TABLE 1

Variability in fasting hemoglobin determinations on samples from the same children on consecutive days

CONCENTRATION LEVEL	NUMBER OF DIFFERENCES ACCORDING TO DEVIATIONS											
	0–0.2 gm./100 cc.	0.2–0.4 gm./100 cc.	0.4–0.6 gm./100 cc.	0.6–0.8 gm./100 cc.	0.8–1.0 gm./100 cc.	1.0–1.2 gm./100 cc.	1.2–1.4 gm./100 cc.	1.4–1.6 gm./100 cc.	1.6–1.8 gm./100 cc.	1.8–2.0 gm./100 cc.	2.0–2.2 gm./100 cc.	2.2+ gm./100 cc.
gm./100 cc.												
18–19												2
17–18											1	
16–17												2
15–16		2	1	1					1		1	1
14–15		4	3	7	4		1			2		
13–14	10	10	9	13	9	3		2				
12–13	10	16	9	9	2	3		1	1			
11–12		1		1		1						
Number of differences	20	33	22	31	15	7	1	3	2	2	2	5
Percentage of total	14	23	15	22	11	5	1	2	1	1	1	4

TABLE 2

Distribution of children according to levels of fasting hemoglobin

HEMOGLOBIN LEVEL	NUMBER OF CHILDREN AT METHODIST CHILDREN'S VILLAGE			NUMBER OF CHILDREN AT HOLY FAMILY ORPHAN'S HOME			NUMBER OF CHILDREN AT ST. JOSEPH'S HOME			NUMBER OF BOYS AT BOYS REPUBLIC (Fall)			NUMBER OF CHILDREN AT BAY CLIFF HEALTH CAMP		
	Fall*	Spring**	Total†	Fall	Spring	Total†	Fall	Spring	Total†	White	Negro	Total	Initial	Final	Aver-age‡
gm./100 cc.															
17.5										1		1	1		
17.0										2		2		1	1
16.5										3		3			
16.0	2		2	1		1		1	1	3		3			
15.5	3		4		1	1	1		1	8	1	9	1		2
15.0	1		2	2		3		2	2	7	2	9	1	1	3
14.5	2	1	5	5	5	15	1	4	5	7		7	6	10	3
14.0	4	4	11	6	13	22	5	10	16	7	5	12	16	13	21
13.5	2	5	13	14	22	41	9	7	16	2	1	3	26	13	14
13.0	11	9	24	19	18	47	7	7	18	2	1	3	13	18	25
12.5	4	7	16	16	9	37	7	8	15	4	2	6	15	17	13
12.0	4	8	16	9	7	19	5	4	10	2		2	6	10	17
11.5	1		2	2	2	6	7	1	8	1		1	7	6	2
11.0				3		3	2		2				1	2	1
10.5														2	
10.0															
Total children	34	34	95	77	77	195	44	44	94	49	12	61	93	93	102
	Hemoglobin (gm./100 cc.)														
Mean	13.7	13.1	13.4	13.2	13.5	13.3	13.0	13.6	13.3	14.8	14.1	14.7	13.4	13.2	13.4
Standard deviation	1.21	.664	.995	.90	.75	.85	.998	.903	.965	1.39	.916	1.329	.96	1.047	.989
Standard error of mean	.208	.114	.102	.102	.085	.061	.150	.136	.100	.20	.26	.179	.100	.109	.098

* Average of determinations made on two consecutive days.

** Average of determinations made on three consecutive days.

† Total for both spring and fall studies, counting some children twice.

‡ One value for each child; may be average of as many as four determinations during one camp period.

centrations below 10.0 gm. per 100 cc. were classed as severe anemia. Guest's study of 600 children (14) indicates that 12.5 gm. of hemoglobin per 100 cc. of blood is a desirable level for children eighteen months old, and from all reports it seems that for older children, values below 12.5 gm. may justifiably be considered unsatisfactory.

As a guide in the evaluation and interpretation of the results of the hemoglobin determinations, Table 1 presents the variability of analyses made on consecutive days with a group of children who were observed for three days in the spring and two days in the fall. The maximum deviation in 143 determinations for consecutive days was 4.2 gm. per 100 cc. The average was 0.7 gm. This variability in hemoglobin concentration is consistent with the observations of Brown and Goodall (26), who found diurnal and daily variations of hemoglobin within this range. Variability introduced by method of estimation as well as true physiological changes are such that Mole (35) has recently stated that unless a change of 8 per cent is observed in serial determinations of this substance, the change cannot be considered significant. Of the values in Table 1, 85 per cent deviated by less than 1.0 gm. per 100 cc., showing standardization of the procedure under the conditions of study.

The distribution of the children in the five groups according to level of fasting blood hemoglobin is given in Table 2. The values for all the children two to eighteen years old ranged from 10.5 to 18.0 gm. per 100 cc., averaging 13.5 gm.

It is evident that no serious degree of anemia existed in these subjects. However, 32 per cent fell below 13.0 gm. per 100 cc., the highest criterion used by Mack (16). Sixteen per cent of our subjects had less than 12.5 gm. hemoglobin per 100 cc. of blood which is suggested as optimum for eighteen-month-old children by Guest (14). Only 4 per cent were below 12.0 gm. per 100 cc. suggested by Metcoff *et al.* (34).

The distribution of values is consistent with the observations of Mugrage and Andresen (12, 15), who found a similar range in children from birth to twenty-one years and of Milam and Muench (20) in studies of North Carolina populations, but in this investigation there were fewer cases of low hemoglobin than the latter workers observed. Ross

TABLE 3

Distribution of fasting hemoglobin levels by age of subjects

AGE	CHILDREN IN METHODIST CHILDREN'S VILLAGE				CHILDREN IN HOLY FAMILY ORPHAN'S HOME				CHILDREN IN ST. JOSEPH'S HOME				BOYS IN BOYS REPUBLIC				CHILDREN IN BAY CLIFF HEALTH CAMP				TOTAL CHILDREN			
	Male		Female		Male		Female		Male		Female		White		Negro		Male		Female		Male		Female	
	Number	Mean hemoglobin level	Number	Mean hemoglobin level	Number	Mean hemoglobin level	Number	Mean hemoglobin level	Number	Mean hemoglobin level	Number	Mean hemoglobin level	Number	Mean hemoglobin level	Number	Mean hemoglobin level	Number	Mean hemoglobin level	Number	Mean hemoglobin level	Number	Mean hemoglobin level	Number	Mean hemoglobin level
yr.		*gm./100 cc.*		*gm./100 cc.*		*gm./100 cc.*		*gm./100 cc.*		*gm./100 cc.*		*gm./100 cc.*		*gm./100 cc.*		*gm./100 cc.*		*gm./100 cc.*		*gm./100 cc.*		*gm./100 cc.*		*gm./100 cc.*
18			2	12.4																			2	12.4
17													1	12.2					1	15.9	1	12.2	1	15.9
16			2	13.4			1	13.3	2	15.8			13	14.8	7	14.1			1	14.4	22	14.7	4	13.6
15	3	15.2	8	13.1	5	13.6					6	13.8	28	15.0	4	13.8	2	13.4			37	14.6	14	13.4
14	4	15.0	1	13.6	6	13.0			2	14.8	5	13.8	11	14.8	1	15.7	1	13.4	1	14.1	25	14.4	7	13.8
13	3	14.3	1	14.8	8	14.0	8	13.9	2	13.4	4	14.1	1	13.7			4	13.3	5	14.0	18	13.8	18	14.0
12	8	13.6	6	12.8	11	13.9	4	14.2	2	13.0	4	12.8					4	13.8	6	13.5	25	13.7	20	13.3
11	5	13.3	8	14.3	6	13.9	4	13.4	5	13.7	1	12.3					12	13.5	5	14.2	28	13.6	18	14.0
10	5	13.6	3	13.2	16	13.6	4	13.0	4	13.7	1	13.3					9	12.9	8	13.7	34	13.4	16	13.4
9	8	12.9	5	12.9	19	13.6	2	13.4	4	14.1	2	14.2					14	13.1	6	13.2	45	13.3	15	13.3
8	6	13.2	7	12.7	14	13.6	6	13.2			2	12.3					4	13.0	6	13.4	24	13.4	21	13.0
7	5	12.7	1	12.4	12	13.3	6	12.9	5	13.4	7	13.3					6	12.9	2	13.2	28	13.1	16	13.1
6	2	13.6	2	13.1	11	12.9	10	12.8	10	12.6	6	13.2					1	12.0	3	12.8	24	12.8	21	13.0
5					10	13.3	8	12.7	2	12.7											12	13.2	8	12.7
4					7	12.4	6	13.0	2	11.8	6	13.2									9	12.2	12	13.1
3					7	12.7	4	12.2	4	12.0	4	12.7									11	12.4	8	12.4
2									2	12.6									1	12.3	2	12.6	1	12.3
Total children.	49		46		132		63		46		48		49		12		57		45		345		202	
Mean hemoglobin (gm./100 cc.).....		13.6		13.2		13.4		13.1		13.2		13.3		14.8		14.1		13.2		13.6		13.6		13.3

and Summerfeldt (36) reported somewhat lower average values for children in a rural orphange (10.4 gm.), in a city institution (11.8 gm.), of middle class (12.0 gm.), and privileged children (13.0 gm.). In the absence of other evidence, the slightly reduced levels of hemoglobin existing in a few of our subjects cannot be assumed to have had their origin in dietary inadequacies.

For each group of children studied (Table 2), the average levels of hemoglobin reveal no essential differences except for the higher mean of the teenage boys at Boys Republic. Higher hemoglobin levels would be characteristic of males in that age group. Studies of the same groups in the fall and in the spring revealed no significant changes in hemoglobin levels. Likewise, the children studied at Bay Cliff Health Camp had representative hemoglobin levels upon entrance and did not show the effect of nutritional conditioning which was found in their levels of fasting blood serum vitamin C (37) and vitamin A (38). Perhaps a longer exposure to improved diet would also have demonstrated a rise in hemoglobin levels.

The distribution of hemoglobin values found at Boys Republic is of interest. Among boys in the age range of fourteen to seventeen years, who normally show increased levels of hemoglobin, nine of sixty-one boys had hemoglobin values of less than 13 gm. per 100 cc. of blood, indicative of some degree of anemia. The medical examinations of the nine boys revealed no peculiarity common to the low hemoglobin group, and all had been at the Boys Republic for two to twelve months. This group of boys probably is representative of children from unsatisfactory backgrounds, both environmental and dietary.

Since the data in Table 2 do not show significant differences among the hemoglobin values for the different groups of children or between determinations in the fall and in the spring, all have been combined to present in Table 3 the hemoglobin values for the children in each group and for all of the children in the five groups according to age. Since sex and race are known to be factors, hemoglobin levels are given separately for males and females, and for white and Negro males at Boys Republic. Only twelve Negro boys were included in the study, and their values showed no marked deviation in hemoglobin level from those of the white youths of comparable age and are therefore not distinguished in the values for all children. The hemoglobin values for boys and girls were similar for the ages three through twelve years. A slow but distinct rise in hemoglobin occurred for each year until the mean values for males and females began to diverge. The averages for girls rose from 12.4 gm. at three years to 13.4 gm. per 100 cc. at ten years with a slight increase in level but no evidence of consistent change for older girls. Values for the boys increased from 12.4 gm. of hemoglobin per 100 cc. at three years to 13.8 gm. during the fourteenth year. The rate of increase then accelerated, reaching 14.7 gm. in the seventeenth year. The attainment by girls of the hemoglobin levels characteristic of the adult female (apparently about 13.5 gm. per 100 cc. [39–41]), occurs at an earlier age than boys attain the adult value characteristic of men (14.5 to 15 gm. per 100 cc.). The results conform with the hemoglobin studies of children made by Mugrage and Andresen (15), but the values were consistently lower.

At Holy Family Orphan's Home, a boy and girl each eight years old and a boy and girl each twelve years old served as subjects of dietary observations in both the spring and fall. Samples of their blood were analyzed for hemoglobin, and during the same week accurate quantitative food consumption records were kept. In the spring precautions were taken in the collection of foods so that the iron contents could be determined. Table 4 shows the blood hemoglobin levels of these children, with their daily iron intakes in fall and spring calculated from values published for the food eaten and their intakes in the spring as determined by analysis.

TABLE 4

Iron intake and fasting hemoglobin levels

SUBJECT AND AGE (years)	IRON INTAKE			HEMOGLOBIN	
	Fall	Spring		Fall	Spring
	Calculated	Calculated	Analyzed		
	mg./day	*mg./day*	*mg./day*	*gm./100 cc.*	*gm./100 cc.*
Leroy (8)	13.7			14.6	
Robert (12)	14.7	13.0	20.4	13.6	14.3
Judith (8)	12.3	11.4	14.6	12.7	13.3
Donna (12)	17.1	13.8	21.0	14.6	14.8
Shelby (8)		10.5	17.6		13.7
Ronald (8)		10.6	17.8		13.4

A detailed discussion of the relative values of analysis and calculation of diet under various conditions will be presented in another paper, but the wide discrepancy between the analyzed and calculated iron intakes should be pointed out. It is likely that this discrepancy is largely attributable to the location of the Holy Family Orphan's Home in the heart of the iron country of Michigan, where much of the food used is of local origin. The iron content of foods raised in such soil might be several times that of foods grown in another area.

While ingesting food which provided iron intakes calculated as 10.5 to 14.7 mg. per day, the hemoglobin levels of the four children ranged from 12.7 to 14.8 gm. per 100 cc. of blood. However, analyses of foods exactly representing those eaten indicated intakes of 15 to 21 mg. per day. Since the children

in three of the five groups studied lived in the Northern Peninsula of Michigan, the absence of any low hemoglobin values which would conform with the nutritional status of some of the children with respect to other nutriments might well be due solely to the geographic environment which assured adequate iron intakes.

SUMMARY

Hemoglobin was determined in fasting, whole blood from 392 children two to eighteen years old in the care of five Michigan agencies, by a micromethod. Determinations were obtained in both the spring and the fall for 155 of the children. The values for all subjects ranged from 10.5 to 18.0 gm. of hemoglobin per 100 cc. of blood, averaging 13.5. Thirty-two per cent of the values were below 13.0 gm.; 16 per cent were below 12.5 gm.; and only 4 per cent were below 12.0 gm. per 100 cc. No significant differences were found among values for the different groups of children or between determinations in the fall and in the spring. Averages for girls rose from 12.4 gm. at three years to 13.4 gm. per 100 cc. at ten years, followed by a slight increase in level but no evidence of consistent change for older girls. Values for boys increased from 12.4 gm. at three years to 13.8 gm. during the fourteenth year, to 14.7 gm. of hemoglobin per 100 cc. in the seventeenth year.

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Reorganization and Revision of A.D.A. Constitution

At the 30th Annual Meeting of the American Dietetic Association held in Philadelphia last October, the House of Delegates elected a committee of three to work on reorganization of the House of Delegates to make it more of a functioning agent in the Association. This committee has been active all year and has made a number of recommendations for changes in the Association and for incorporating these changes in the constitution. Dr. Helen A. Hunscher, President, appointed a Review Committee to work on these recommendations and come to agreement with the Reorganization Committee on all principles.

For revision of the constitution, three committees, namely the Reorganization, its Review, and the By-Laws Committees, were combined and the Chairman of the Council of the House of Delegates also included. This committee consists of eleven members, as follows:

Helen S. Mitchell
Helen Gillum
Elizabeth Perry (Chairman)
— Reorganization Committee, elected by the House of Delegates

Mary McKelvey, Chairman of the Council of the House of Delegates

Mary Henderson
Ruth Madsen
Jean Cameron (Chairman)
— By-Laws Committee, elected by the House of Delegates

Helen A. Hunscher, President
Lillian Storms Coover, Secretary
Mable MacLachlan, Past-President
Anna Boller Beach, Past-President
— Review Committee

Representatives of the three original committees held a two-day meeting in Chicago on April 23 and 24 for the purpose of:

(a) Drafting proposals concerning certain changes in the organization of the Association will enable it to function more efficiently by giving the House of Delegates a greater part in the activities.

(b) Recommending revisions in the constitution of the Association so that the planned reconstruction of the Association can be set in motion.

(c) Discussing with the Association's lawyer, Edward P. Morse of Sonnenschein, Berkson, Lautman, and Morse, certain changes needed in the constitution to meet the expanded membership and activities of the Association.

Discussions of the reorganization proposals will be presented in subsequent issues of the JOURNAL. The Committee urges members to read them carefully. Thus when these proposals come up for a vote in October at the Annual Meeting in Boston, members will be thoroughly familiar with them.—*Anna Boller Beach, Chairman, Review Committee, and Elizabeth Perry, Chairman, Reorganization Committee.*

Nutritional Status of Children

VIII. Blood Serum Alkaline Phosphatase[1]

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KAY (1,2) in 1930 made the first report that serum alkaline phosphatase activity is increased during rickets and other bone disorders, such as osteomalacia and osteitis. Since that time Smith and Maizels (3, 4), Bodansky and Jaffe (5), Stearns and Warweg (6), Barnes and Carpenter (7), and many others have studied serum alkaline phosphatase in the blood of normal and rachitic subjects. Convincing evidence is available that the concentration of this enzyme in serum is high in rickets and that the degree of increase above normal levels is roughly proportional to the severity of the rachitic process. Treatment of the rachitic subject with vitamin D results in healing and progress toward restoration of serum alkaline phosphatase to normal levels and serves as the criterion of the rate of healing. Since interest developed in serum alkaline phosphatase as an indicator of rickets, it has continually become more evident that many factors are operative in determining the level of the enzyme in blood serum. Also, serum alkaline phosphatase values can be interpreted only with recognition of the numerous physiological processes which influence its concentration in the blood stream.

The alkaline phosphatase enzymes are widely distributed in the body and function to release inorganic phosphorus from organic phosphoric acid esters. Bone and cartilage are particularly rich in alkaline phosphatase where it is believed by Robison and Soames (8) to be important in promoting ossification through precipitation of calcium phosphate owing to production of an excessive concentration of phosphate ion. Alkaline phosphatases are found also in substantial concentrations in liver, kidney, intestine, and other tissues. There is considerable evidence that osseous tissues may be the principal source of serum alkaline phosphatase, although, it is not clear that bone is the only point of origin. In fact, there is evidence, particularly in the work of Bodansky (9), that organs other than bone may be equally important contributors to the total alkaline phosphatase of the serum.

Smith and Maizels (3) pointed out that during scurvy, serum alkaline phosphatase activity was below normal. Thus, it appeared that vitamin D and vitamin C deficiencies might have opposite effects upon the blood levels of the enzyme. They suggested that the lowered serum alkaline phosphatase in scurvy may be due to the retardation of osteoblastic bone growth and the diminished vascularity of cartilaginous areas which accompany vitamin C deficiency. Shwachman and Gould (10, 11), in studies of the serum and bone alkaline phosphatase in scurvy, found that the levels of the enzyme in both were depressed in parallel, whereas the alkaline phosphatase in organs, such as liver, kidney, and intestine, was unaffected. In the guinea pig, the level of serum alkaline phosphatase is so sensitive to lack of vitamin C that Gould and Shwachman (12) described a bioassay method for determining antiscorbutic potency of materials which was based on their success in using ascorbic acid to prevent a fall in serum alkaline phosphatase in animals consuming a diet devoid of other sources of vitamin C.

Bodansky (13) and Mulay and Hurwitz (14), among others, demonstrated that healthy children before and during adolescence have serum alkaline phosphatase levels three to six times those of the normal adult. Thus, it is not surprising that many endocrine functions related to growth, development, and sexual maturity have profound influences upon serum alkaline phosphatase activity. Abnormally low levels of serum alkaline phosphatase were demonstrated in children with depressed thyroid function by Talbot (15), who recommended the determination as an aid in the recognition of cretinism and juvenile hypothyroidism (16). Talbot suggested that in children the retardation of ossification known to ac-

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company hypothyroidism may explain the low serum alkaline phosphatase levels (15). Buchwald and Hudson (17, 18) found that injection of estrogens into the male rat results in a decrease in the acid but not the alkaline phosphatase in the serum and a decrease in bone alkaline phosphatase. In female rats, androgen produced a significant increase in serum alkaline phosphatase but had little or no effect on the acid phosphatases of serum or the alkaline phosphatase of bone. Li *et al.* (19, 20), working with rats, demonstrated that hypophysectomy or injection of pituitary adrenocorticotropic hormone results in a significant decrease in serum alkaline phosphatase. Vail and Kochakian (21) found injection of adrenal cortical extract to increase markedly the alkaline phosphatase of liver but not of kidney. Testosterone propionate produced a marked increase in the alkaline phosphatase of kidney but not of liver.

Metabolism may also influence serum alkaline phosphatase levels. Bodansky (9) found with dogs that alimentary hyperglycemia produced a rise, and fasting a fall in serum alkaline phosphatase. A similar reaction to fasting was observed by Weil and Russell (22), who also demonstrated that food intake, specifically certain lipids in the food, produces increased blood alkaline phosphatase activity. Gould (23) also observed elevation of serum alkaline phosphatase levels in rats consuming high-fat dietaries. However, Bessey, Lowry, and Brock (24) showed human subjects to be remarkably constant in serum alkaline phosphatase activity. Tests with two adult subjects revealed no measurable change in serum alkaline phosphatase produced by 18 hr. of fasting or by 40-hr. periods of high-fat intake. Bessey (25) called attention to the fact that there is great variation among species, with respect to the enzyme. But, from experimental work with about six people, he states that neither high-protein nor high-fat diets, nor fasting, influences the level in an individual, although one individual may have a value twice that of another.

In recent surveys of the nutritional status of population groups, such as those by Youmans (26) and by a committee of nutritionists in Newfoundland (27), the measurement of serum alkaline phosphatase has been employed, primarily, for detection of vitamin D deficiency. Measurements of serum alkaline phosphatase activity are expressed in arbitrary units, contingent upon the conditions under which the determination is made and the type of substrate by which the enzyme activity is estimated. When sodium glycerophosphate is used as the substrate in the method of Bodansky (28), the activity is expressed in "Bodansky units." When sodium paranitrophenyl phosphate is used as the substrate in the micromethod outlined by Bessey, Lowry, and Brock (24), the results are expressed in nitrophenol units. Adults normally have a range of serum alkaline activity between 1 and 3 nitrophenol units, averaging about 2.0 (27). The period of lactation and the last months of pregnancy in human subjects were shown by Vermehren (29) to be associated with high serum alkaline phosphatase activity. Similar findings were obtained by Weil (30) in studies of rats during lactation.

Bodansky (13), in a study of twenty-seven children two to fifteen years old, found values from 5 to 14 with an average of 7.3 Bodansky units of serum alkaline phosphatase activity (in nitrophenol units, range is 2.8 to 7.8 with an average of 4.1). Talbot (16) working with seventy normal children two to ten years of age and using the Bodansky method, substantiated this range. Adamson *et al.* (27) stated tentatively that the normal range of serum alkaline phosphatase activity for children lies between 2 and 8 nitrophenol units and found an average of 4.9 units in children under eighteen years of age during a nutritional status survey in Newfoundland. However, that group of workers, which included Bessey and Lowry, found an average level considerably higher—6.4 nitrophenol units of serum alkaline phosphatase—among New York school children. During active rickets, serum alkaline phosphatase levels of as much as 60 Bodansky or 34 nitrophenol units are not uncommon, and much higher values are frequently observed. Mulay and Hurwitz (14) found in studies of 272 children that up to about the fifteenth year characteristically high serum alkaline phosphatase levels exist, but that a rapid shift to lower adult values may occur at any time thereafter up to the twenty-fifth year. Vermehren (31) found highest values for serum alkaline phosphatase in infants and in early puberty (both periods of rapid growth). The pre-adolescent rise in serum alkaline phosphatase occurred earlier in girls than in boys, and for all subjects over nineteen years old, serum alkaline phosphatase levels were minimal.

METHODS AND PROCEDURE

Preceding papers in this series have discussed the evaluation of nutritional status (32), the organization of the investigation, the five groups of children who were subjects of the studies, and the methods of collecting and preparing the fasting samples of blood (33).

Serum alkaline phosphatase was determined in blood from 377 children two to eighteen years old, 107 of whom were studied both in the fall and in the spring. Five cu. mm. of serum from blood obtained by finger puncture were used in the analysis for serum alkaline phosphatase by the method of Bessey, Lowry, and Brock (24), using sodium paranitrophenyl phosphate as the substrate. Released paranitrophenol was measured spectrophotometrically, using a Beckman spectrophotometer adapted for micro-procedure as outlined by Lowry

and Bessey (34). Results of determinations are expressed in nitrophenol units, 1 unit being the amount of phosphatase activity per liter of serum required to liberate 1 millimol of nitrophenol per hour from sodium paranitrophenyl phosphate under the specific conditions of the test. One nitrophenol unit, as described by Bessey, Lowry, and Brock (24), is equivalent to 1.79 Bodansky units.

RESULTS AND DISCUSSION

Table 1 shows the variation between duplicate determinations upon 181 fasting blood samples. With concentrations ranging from 1 to 8 nitrophenol units, 72 per cent of the duplicates varied by not more than 0.2 units and 89 per cent varied by 0.4 or less, indicating highly consistent results with the method. The standard deviation for all the duplicate determinations was 0.18 nitrophenol units, whereas Bessey, Lowry, and Brock (24) found a standard deviation of 0.15 units.

Samples obtained upon three consecutive days in the spring and two consecutive days in the fall from subjects at the Methodist Children's Village demonstrated the constancy of serum alkaline phosphatase values from day to day in the same subjects (Table 2). Of 122 differences, only 15 per cent exceeded the maximum differences in duplicate analyses (Table 1). The standard deviation was ± 0.40, and the results conform with those of Bessey (13) who observed constancy in the serum alkaline phosphatase level of individual children.

The distribution of the children according to blood levels of serum alkaline phosphatase is shown separately for each of the five groups in Table 3. Until the many studies of serum alkaline phosphatase activity which are in progress in various laboratories are published and integrated, the assignment of an upper limit of normal concentration of this enzyme must remain arbitrary. Values indicative of active rickets in infants were not observed, but a rather large number of children had serum alkaline phosphatase activity greater than 8 nitrophenol units, the arbitrary upper limit of normal suggested by Bessey (25). There is no evidence, however, that these mildly elevated values are in any sense pathological. The serum alkaline phosphatase levels ranged from 1 to 17 nitrophenol units, with a mean of 6.3 units. Approximately 84 per cent of the values were between 4 and 9 units. Whether the values below 3 or 4 nitrophenol units are indicative of poor nutritional status cannot be determined. Significant differences were not demonstrated in the fall and in the spring by the three groups of subjects studied at both seasons, nor did the serum alkaline phosphatase levels of the children at Bay Cliff Health Camp change appreciably in response to the six-week period of "nutritional conditioning."

The average serum alkaline phosphatase values for boys and girls of different ages in the five groups are shown separately and combined in Table 4.

TABLE 1

Reproducibility in serum alkaline phosphatase determinations in duplicate blood serum samples

SERUM ALKALINE PHOSPHATASE LEVEL	NUMBER OF DUPLICATE DETERMINATIONS ACCORDING TO DIFFERENCES BETWEEN THEM								
	0–0.1 nitrophenol units	0.1–0.2 nitrophenol units	0.2–0.3 nitrophenol units	0.3–0.4 nitrophenol units	0.4–0.5 nitrophenol units	0.5–0.6 nitrophenol units	0.6–0.7 nitrophenol units	0.7–0.8 nitrophenol units	0.8–0.9 nitrophenol units
nitrophenol units									
7–8	3	7	6	2	4	1	1		
6–7	2	13	8	5	5	2	1		1
5–6	2	11	6	2	3	2	3	5	
4–5	1	14	11	5	1	1	2	1	
3–4		3	1	2					
2–3	3	10	3						
1–2	5	12	9	1	1				
Number of differences..	16	70	44	17	14	6	7	6	1
Percentage of total..	9	39	24	9	8	3	4	3	1

TABLE 2

Variability in fasting blood serum alkaline phosphatase determinations on samples from the same children on consecutive days

CONCENTRATION LEVEL	NUMBER OF DIFFERENCES ACCORDING TO DEVIATION						
	0–0.2 nitrophenol units	0.2–0.4 nitrophenol units	0.4–0.6 nitrophenol units	0.6–0.8 nitrophenol units	0.8–1.0 nitrophenol units	1.0–1.2 nitrophenol units	1.2+ nitrophenol units
nitrophenol units							
13–14			1				1
12–13				1			
11–12		2	3				1
10–11		1	1		2		2
9–10	2	3	2	2		1	1
8–9	8	6	2	4	3		1
7–8	3		5	2	3	1	4
6–7	4	4	1	1	1		5
5–6	2	4	3				
4–5	4	4					1
3–4	2	2	3				
2–3	3	6		1			
1–2	2	1					
Number of differences....	30	33	21	11	9	2	16
Percentage of total..	25	27	17	9	7	2	13

TABLE 3

Distribution of children studied according to levels of blood serum alkaline phosphatase

SERUM ALKALINE PHOSPHATASE	NUMBER OF CHILDREN IN METHODIST CHILDREN'S VILLAGE			NUMBER OF CHILDREN IN HOLY FAMILY ORPHAN'S HOME			NUMBER OF CHILDREN IN ST. JOSEPH'S HOME			NUMBER OF BOYS IN BOYS REPUBLIC	NUMBER OF CHILDREN IN BAY CLIFF HEALTH CAMP		
	Fall*	Spring**	Total†	Fall	Spring	Total*	Fall	Spring	Total†	Fall	Initial	Final	Average‡
nitrophenol units													
16								1	1				
15													
14											1		
13				1		1				2			1
12	1	1	2				1	1	2	2		2	
11		2	4		1	1			2			1	1
10	1	1	3				1		2	2	1	1	
9	3	1	7	3	1	5		1	1	4	2	2	3
8	8	9	21	3	2	12	1	1	4	4	10	10	8
7	7	3	15	7	4	16	1		4	12	8	14	17
6	2	8	11	16	14	40		8	19	7	14	14	17
5	3	2	8	12	15	42	6	2	12	12	25	19	26
4	2	1	6	16	13	39	4		10	7	17	14	19
3	2	1	6	1	9	13				3	8	9	6
2	3	3	8			3	1	1	5	1	1		2
1	1	1	2									1	1
Total children	33	33	93	59	59	172	15	15	62	56	87	87	101
Alkaline Phosphatase (nitrophenol units)													
Mean	6.76	7.01	6.84	6.12	5.56	5.84	6.03	7.41	6.49	6.84	6.03	6.27	6.03
Standard deviation	2.63	2.65	2.62	2.61	1.62	1.62	2.57	3.38	2.64	2.44	1.86	1.97	1.87
Standard error of mean	.458	.461	.272	.34	.21	.12	.664	.873	.335	.326	.199	.211	.186

* Average of determinations made on two consecutive days.

** Average of determinations made on three consecutive days.

† Total for both fall and spring studies counting some children twice.

‡ One value for each child; may be average of as many as four determinations during camp period.

The data verify observations of other investigators (14,15,17,25) that sex and age have a significant influence upon serum alkaline phosphatase, particularly in older children. However, under the age of ten years, there are no apparent differences between boys and girls in this respect, nor is there any apparent trend with age. Older boys tend to have higher values and older girls lower values on the average, than do younger children.

From determinations of serum alkaline phosphatase for over 1000 children eleven to eighteen years old, Bessey (25) has stated that phosphatase values for males reaches a peak around fourteen years of age, and then the values drop, but the values for the girls at eleven years are already decreasing. Bessey believes that two factors could contribute to the shape of the curves representing an average boy and girl: one is the fact that phosphatase does change with age, and the other is that whatever causes this change with age can start with different ages within a group, so that the slopes of average curves do not necessarily represent the slope of a curve for a single individual, if he were followed from eleven to eighteen years of age. He comments that the phosphatase change with age is hard to correlate with data, such as rate of bone growth or rate of weight change, because the phosphatase values in boys are already dropping at thirteen years, at an age when the rate of bone growth is very rapid and perhaps the change has to do with some phase of sexual maturity.

Inasmuch as age and sex definitely influence the serum alkaline phosphatase levels of older children, the values for boys and girls under ten years of age were combined for comparison of the groups in the care of different agencies. The values showed that the children at Bay Cliff Health Camp, Holy Family Orphan's Home, and St. Joseph's Home were comparable, on the average. However, subjects at the Methodist Children's Village under ten years old had a mean serum alkaline phosphatase level nearly 2 nitrophenol units higher than the other subjects. The explanation of this difference is not clear, but in an earlier publication (33), where the weights and heights of the five groups of children were compared to standards, it was shown that the youngsters in the care of the Methodist Children's Village tended to be larger than those in the other groups. It may be, therefore, that growth and certain physiological characteristics are related to serum alkaline phosphatase activity levels in young children.

TABLE 4

Distribution of fasting blood serum alkaline phosphatase levels by age of subjects

AGE	CHILDREN IN METHODIST CHILDREN'S VILLAGE				CHILDREN IN HOLY FAMILY ORPHAN'S HOME				CHILDREN IN ST. JOSEPH'S HOME				BOYS IN BOYS REPUBLIC		CHILDREN IN BAY CLIFF HEALTH CAMP				TOTAL CHILDREN			
	Male		Female		Male		Female		Male		Female				Male		Female		Male		Female	
	Number	Mean fasting blood serum alkaline phosphatase level	Number	Mean fasting blood serum alkaline phosphatase level	Number	Mean fasting blood serum alkaline phosphatase level	Number	Mean fasting blood serum alkaline phosphatase level	Number	Mean fasting blood serum alkaline phosphatase level	Number	Mean fasting blood serum alkaline phosphatase level	Number	Mean fasting blood serum alkaline phosphatase level	Number	Mean fasting blood serum alkaline phosphatase level	Number	Mean fasting blood serum alkaline phosphatase level	Number	Mean fasting blood serum alkaline phosphatase level	Number	Mean fasting blood serum alkaline phosphatase level
yr.		*nitrophenol units*		*nitrophenol units*		*nitrophenol units*		*nitrophenol units*		*nitrophenol units*		*nitrophenol units*		*nitrophenol units*		*nitrophenol units*		*nitrophenol units*		*nitrophenol units*		*nitrophenol units*
2									1	5.4							1	6.5	1	5.4	1	6.5
3					5	6.3	4	4.4	2	6.0	3	5.8							7	6.2	7	5.0
4					4	5.7	6	5.6	1	4.7	3	6.0							5	5.5	9	5.7
5					9	5.4	7	5.9	1	6.3									10	5.5	7	5.9
6	2	8.2	2	8.8	11	5.8	10	5.2	9	5.6	4	6.0			1	4.6	3	5.4	23	5.9	19	5.8
7	4	7.3	1	4.1	12	5.7	6	5.3	2	5.6	4	6.8			6	5.9	2	7.0	24	6.0	13	5.9
8	6	7.7	7	7.4	11	6.5	6	5.2			1	5.9			4	6.2	6	4.7	21	6.8	20	5.8
9	8	8.6	5	6.2	16	6.0	2	7.2	4	5.9	1	7.8			14	5.5	6	6.4	42	6.3	14	6.6
Mean	20	8.0	15	7.0	68	5.9	41	5.4	20	5.7	16	6.2			25	5.7	18	5.8	133	6.2	90	5.9
10	5	7.0	3	7.4	12	6.4	4	7.2	2	8.0					9	5.3	8	5.9	28	6.2	15	6.6
11	5	6.1	8	8.0	5	6.1	4	5.5	4	8.2	1	2.7			12	6.3	5	7.6	26	6.5	18	7.0
12	8	8.6	6	9.8	10	6.1	4	5.1	2	11.3	4	7.0			4	6.7	6	6.6	24	7.5	20	7.3
13	3	8.0	1	4.9	6	7.6	7	3.9	2	14.6	2	4.0	1	7.1	4	7.9	5	6.8	16	8.6	15	5.0
14	4	4.3	1	3.3	5	5.4			1	11.4	3	5.9	11	7.8	1	8.5	1	5.6	22	6.8	5	5.3
15	3	6.2	7	2.4	5	7.4					4	2.3	24	7.3	1	5.4			33	7.2	11	2.4
16			2	2.4			1	2.2	1	11.3			19	5.6			1	2.7	20	5.9	4	2.4
17													1	6.9			1	1.4	1	6.9	1	1.4
18			2	1.4																	2	1.4

The mean values in Table 4 for children in each age group above nine years are comparable to those found by Bessey (25) with New York City school children in the course of development of the micro-techniques for blood analysis. The marked differences in behavior of serum alkaline phosphatase levels in teen-age boys and girls are consistent with the results of the studies of growth at the Center for Research in Child Development at Harvard University (35), of Shuttleworth (36), and with Talbot's (37) studies of basal metabolic rate. The thyroid, adrenal cortex, anterior pituitary hormones including growth hormone, and gonadal hormones which are all involved in the processes taking place in the adolescent are known to influence serum alkaline phosphatase activity. It is interesting that the maximum average serum alkaline phosphatase level in girls occurred prior to the maximum for boys, approximately at adolescence. Following this, all girls rapidly attain serum alkaline phosphatase levels characteristic of the adult. In contrast, the average for the boys drops much less rapidly, and many have high values for serum alkaline phosphatase through the seventeenth year, although by this age the levels for some males are low. It appears that a considerable rise in serum alkaline phosphatase frequently occurs early in the process of sexual maturation, and perhaps the lowering of serum alkaline phosphatase to levels characteristic of adults is indicative of sexual maturity. If this is true, the serum phosphatase data would suggest that the process of sexual maturation occurs later and less uniformly in boys than in girls.

SUMMARY

Serum alkaline phosphatase was determined in blood obtained by finger-puncture from 377 children two to eighteen years old, of whom 107 were studied both in fall and in spring.

The variation between duplicate determinations showed consistent results with the micro-method, and data for the same subjects on consecutive days showed more variation than the duplicate determinations.

For all the children, serum alkaline phosphatase levels ranged from 1 to 17 nitrophenol units. Significant differences were not demonstrated in the fall and spring by the three groups of subjects studied. A group of children in a health camp did not show changes during six weeks of improved dietary regimen.

Under the age of ten years, the serum alkaline phosphatase levels of boys and girls were similar, but marked differences in levels were found for older boys and girls. The maximum level occurred in girls at a younger age than in boys. The data for older girls showed a sharp decline in serum alkaline phosphatase, but for boys the levels remained high and irregular.

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Honey in the Diet in Heart Disease

There is no justification in the literature for the statement that bee's honey is the best nourishment of the heart. All glucose is good food for the myocardium. A high-carbohydrate diet is practically always prescribed for patients with myocardial insufficiency. Further observations should be made on honey to determine whether it is better than any other substance.

Honey is defined by Shuette and Baldwin as the nectar and saccharine exudation of plants, gathered, modified, and stored in the comb by the honeybee. Chemically it is a natural, concentrated, unrefined sirup of invert sugar and flavored according to the floral source. The main component is 75 to 80 per cent invert sugar, a conversion product of sucrose. The minor components are organic acids, pigments, nitrogen-containing components or compounds, and pollen. Seven members of the B-complex (particularly niacin, pantothenic acid, riboflavin, pyridoxine, and thiamine) and ascorbic acid have been identified in honey. There are small amounts of iron, copper, sodium, potassium, magnesium, calcium, manganese, and phosphorus, all of which have been shown to be essential to good nutrition in animals. Commercial processes for clarifying reduce the vitamin content 33 to 50 per cent. Honey has been used as a levulose tolerance test of liver function.

Glucose is as effective as any monosaccharide, and invert sugar is normally changed to glucose in the liver. Fructose is considered to be better at glycogen formation than glucose; galactose is less so. Glucose when injected is absorbed and causes an increase in liver glycogen. Some is converted to muscle glycogen, and some is oxidized. Fructose may be converted slowly to glucose in muscle. The only sugar that may be directly oxidized in the muscle is d-glucose (dextrose). The usefulness of any carbohydrate, therefore, depends on the ease with which it is converted to d-glucose.

Honey is a good source of carbohydrate and would be rational in the dietary and dietotherapy of cardiac patients manifesting myocardial insufficiency.—*From Queries and Minor Notes, J.A.M.A. 136: 433 (February 7), 1948.*

Thiamine and Riboflavin Content of Raw and Cooked Dried Apricots[1]

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INASMUCH as thiamine and riboflavin are both fairly widespread in occurrence and since staple foods of low B-content may constitute a major fraction of the total supply of the B-complex, all sources of the B-vitamins assume importance. Since much of our food is eaten cooked, methods of cooking and processing should be accomplished under optimal conditions for the preservation of the varying amounts of thiamine and riboflavin.

Also, since use of large amounts of soda in cookery is deleterious to preservation of these factors, nutritionists are justified in advising against its indiscriminate use. On the other hand, there are advantages to the addition of sodium bicarbonate to dried fruit while cooking. It cuts appreciably the cooking time and reduces the amount of sugar necessary for a palatable, sufficiently sweet product. In the case of sun dried apricots, sugar may be omitted entirely when soda is added, and the resulting cooked fruit is sweet enough. These advantages are not negligible. It, therefore, seemed important to investigate the loss of vitamins, if any, resulting from such a use of sodium bicarbonate.

EXPERIMENTAL PROCEDURE

It was essential, of course, to determine first the thiamine and riboflavin content of the sun dried, raw apricots. Next the apricots were cooked so as to obtain the best possible products from the standpoint of texture and taste, but using soda for part of the apricots and no soda for the remainder. The fruit cooked without soda required the addition of sugar and a 55-min. cooking period; that cooked with soda needed 35 min., and no sugar was added.

The thiamine determinations on the various samples of apricots were done by the method of Booher and Hartzler (1) using eight litters of albino rats (sixty-six animals) of known lineage.[3] These animals were depleted of their thiamine stores by having been fed the thiamine-free basal diet of Kline, Tolle, and Nelson[4] (2) in which the thiamine was destroyed by the sulphur-dioxide-sodium-sulphite treatment of the yeast. The value of this diet as a thiamine-free ration was attested by the work of Van Etten, Ellis, and Madsen (4). The positive controls were given 3 mcg. (1 I. U.) of thiamine per day of a solution made according to the suggestion for using the U.S.P. Reference Standard of the American Pharmaceutical Association (5).

The riboflavin determinations were done by the microbiological method of Snell and Strong (6) using a later modification as worked out by Strong and Carpenter (7) and employing *L. casei* ϵ as the test organism.[5] The acid produced by *L. casei* ϵ was titrated electrometrically by a Beckman pH meter. Nine assays in all were made by this method. Because of the sensitivity of riboflavin to direct light as noted by Williams and Cheldelin (8), all work involving the handling of riboflavin was done in a room in which the light globes had been treated with a red lacquer and the Venetian blinds had been drawn. For the stock solution, Merck's pure

[1] Received for publication September 8, 1947.

[2] The data in this paper were taken from the thesis of Florence C. McGucken submitted in partial fulfillment of the requirements for the degree, Master of Science.

[3] Descendants of stock animals obtained from the laboratories of Dr. H. J. Deuel, Department of Biochemistry and Nutrition, University of Southern California.

[4] Composition of basal diet: sucrose, 61 per cent; casein, 18 per cent; sulphited yeast, 10 per cent; Hubbell (3) salt mixture, 3 per cent; corn oil, 6.8 per cent; and sardine oil, 1.2 per cent.

Yeast was brewer's blended yeast residuals.

Casein was rendered approximately free of B vitamins by washing with fresh water eleven times during the process of manufacture, and further treated in our laboratory by pouring sulphite-treated yeast over the casein and drying the mixture at 45°C.

Sardine oil was a preparation containing added vitamin A. Final value per gram: 3000 I.U. vitamin A; 400 I.U., vitamin D.

[5] Culture of *L. casei* ϵ obtained from the laboratory of Dr. H. J. Deuel, Department of Biochemistry and Nutrition, University of Southern California.

crystalline riboflavin was accurately weighed into a black weighing bottle and then dissolved in warm acetic acid and kept under toluene at 10°C.

The fruit for assay was prepared in the following manner. The sun dried, raw apricots were ground and stored in air tight dark jars. Those to be cooked were weighed out into two 454-gm. lots. One lot was added to a solution of 20 gm. sugar and 750 ml. distilled water and simmered gently for 55 min. in a covered enamel saucepan. The other lot was added to a solution of 6 gm. of sodium bicarbonate and 750 ml. distilled water and simmered in a covered enamel saucepan for 35 min. All cooked apricots, including juice, were poured into shallow pans, dried to their original weight in the oven at 45°C, and subsequently ground and stored in air tight dark jars. The Beckman *p*H meter was used to determine the *p*H of the raw, sun dried fruit (*p*H, 4.15) and also of the fruit cooked without soda (*p*H, 4.5) and with soda (*p*H, 5.0), and it was found even with the relatively high amount of soda used, a product resulted which remained definitely acid.

RESULTS AND DISCUSSION

Thiamine

The average value of thiamine in the raw, sun dried apricots was 192 ± 2.7 mcg. per 100 gm. of fruit; for those cooked with sugar and water, 157 ± 4.5 mcg.; and for those cooked with soda and water, 148 ± 2.6 mcg. (Table 1). Following the method of Swift (9), five animals in all were cast out in the final calculations.

The thiamine values of the apricots cooked by the two methods were treated by the statistical method outlined by Sherman (10), and this justified the conclusion that adding soda instead of sugar to the apricots in cooking had very little effect upon the thiamine content of the cooked fruit. Therefore, since the apricots cooked by the two different methods did not vary significantly in thiamine value, it was feasible to compare the average thiamine level for all of the cooked apricots (regardless of method) with that for the raw apricots. It was found that there was a thiamine loss of about 18 per cent in the cooked fruit (Table 2).

One fact of interest in regard to the *p*H of the raw sun dried apricot (4.15) was that it was found to be approximately that at which the greatest destruction of thiamine occurs in the sulphur-dioxide-sulphite-treated yeast. Hence one would expect greater destruction of thiamine than of riboflavin in sulphited, dried fruit. Morgan (11) reported thiamine destruction in sulphited apricots even before Williams (12) demonstrated the splitting of the thiamine molecule by sulphite.

Considerable, though not extensive, work has been done on the destruction of thiamine by heat.

TABLE 1

The amounts of thiamine in raw, sun dried apricots and in sun dried apricots cooked with sugar and water and with sodium bicarbonate and water

ANIMALS	SUPPLEMENT	AVERAGE GAIN	CALCULATED AVERAGE AMOUNTS OF THIAMINE	THIAMINE ASSAYED	AVERAGE VALUES OF THIAMINE	
	per day	*gm./week*	*mcg./day*	*mcg./100 gm.*	*mcg./100 gm.*	
Controls for *raw* fruit assay						
I. Female	3 mcg. thiamine	8.9	3			
II. Male		9.2	3			
Low level						
Group 1	2 gm. raw apricot	10.8	3.60	180		
Group 2		11.4	3.75	185		
High level					192 ±2.7	
Group 1	3 gm. raw apricot	17.90	5.90	197		
Group 2		17.93	5.82	194		
Controls for *cooked* fruit assay						
III. Female	3 mcg. thiamine	9.21	3			
IV. Male		9.18*	3			
Low Level	2 gm. apricot cooked with sugar	10.1	3.30	165		
High level					157 ±4.5	
Group 1	3 gm. apricot cooked with	14.3	4.66	155		
Group 2	sugar	15.0	4.99	166		
Low level	2 gm. apricot cooked with soda	9.2	3.0	150		157 ±2.7
High level					148 ±2.6	
Group 1	3 gm. apricot cooked with soda	13.4	4.40	147		
Group 2		13.2	4.30	143		

*One male in this group died.

Morgan and Frederick (13) found greater losses of thiamine in the crust of baked bread than in the crumb, as a result of direct application of heat. Similar results were reported for baked bread and rolls by Hoffman, Schweitzer, and Dalby (14) and by Shultz, Aitken, and Frey (15). Our results also indicated thiamine to be somewhat unstable to heat under influence of moist cookery.

TABLE 2

Relationship of method of preparation of apricots to thiamine content of final products

TYPE AND METHOD OF TREATMENT	NUMBER OF EXPERIMENTAL ANIMALS	CONTAINER FOR COOKING	TIME OF COOKING	*p*H OF SAMPLES	THIAMINE	LOSS
			min.		*mcg./100 gm.*	%
Raw, sun dried	30			4.15	192 ±2.7	
Sun dried, cooked with water and sugar (20 gm. per 454 gm. of fruit), dried at 45°C. to original weight, and ground	18	enamel saucepan with cover	55	4.50	157 ±4.5	18
Sun dried, cooked with water and soda (6 gm. per 454 gm. of fruit), dried at 45°C. to original weight, and ground	18	enamel saucepan with cover	35	5.0	148 ±2.6	18

The effect of increased alkalinity upon thiamine was studied by Booth (16), who showed that the destruction of the vitamin increased proportionately with the length of time of exposure to heat and the increase in alkalinity. These findings were confirmed by the work of Sherman and Burton (17), who experimented with the effect of increased heat and alkalinity on tomato juice, and by Halliday (18) who made similar experiments on protein-free milk.

This early work was done, however, under conditions pretty well out of the range of ordinary cooking practices. Excessive amounts of soda were used and cooking times were too long. Aughey and Daniel (19) showed little loss of thiamine in navy beans cooked with soda when advantage was taken of the one-third less cooking time. Deuel and co-workers (20) found only a slight loss in the thiamine content of fresh and fresh-frozen peas cooked with soda, taking advantage of the shorter cooking time necessary. Also Barackman (21) found that a 12-min. baking period for baking powder (sodium bicarbonate) biscuits resulted in no apparent loss of thiamine. Hence with the shorter cooking time needed for apricots cooked with soda, no greater destruction of thiamine should be expected.

Riboflavin

The average value of the riboflavin was 217 mcg. per 100 gm. of raw, sun dried apricot, a figure somewhat lower than that given by Sherman (10) for apricots, dried. This difference between artificially dried and sun dried fruit is to be expected since longer exposure to sunlight would result in greater destruction of riboflavin. The average value of riboflavin for both groups of cooked apricots (with and without the addition of soda) was 200 mcg. per 100 gm. of cooked fruit (Table 3). This discredited the idea that sodium bicarbonate *per se* was responsible for any destruction of riboflavin. The loss of riboflavin in both groups of cooked fruit as compared with the raw fruit was about 8 per cent. In handling these data, it was not necessary to treat them statistically because the values showed close agreement, although one result was cast out, according to the method of Swift (9) because it showed too great a deviation from the average.

As in the case of thiamine, the earlier work done pertaining to the stability of riboflavin employed conditions (increases of both temperature and *p*H) out of the range of those met in ordinary cookery. Thus Halliday (22) showed some riboflavin destruction (although less than the thiamine) under identical conditions of experiment on protein-free milk. Contrasting with the work of Halliday (22), Deuel and co-workers (20), working under conditions more nearly approaching usual cooking practices, determined the amount of riboflavin in fresh and fresh-frozen cooked peas and found a very small percentage of riboflavin loss. They concluded that the addition of soda *per se* had little to do with the loss and that the cooking process itself was the significant factor.

In conclusion, it might be said that the loss of riboflavin (about 8 per cent) resulting from the cooking of sun dried apricots (either with or without soda) was even smaller than that for thiamine (about 18 per cent) under identical conditions, hence riboflavin would appear more stable to the heat of cooking than thiamine.

SUMMARY

Using the method of Booher and Hartzler (1), feeding experiments were conducted on sixty-six albino rats to determine the amount of thiamine present in raw, sun dried apricots, and in sun dried apricots cooked with sugar and in fruit cooked with soda. Following the microbiological method of Snell and Strong (5), nine complete assays were run to determine the riboflavin content of sun dried apricots prepared as above.

The raw apricots contained 192 ± 2.7 mcg. of thiamine per 100 gm. of fruit and 217 mcg. of riboflavin per 100 gm. of fruit. The fruit cooked either with or without the addition of soda contained an average of 157 ± 2.7 mcg. of thiamine per 100 gm., showing a loss of 18 per cent of thiamine, and 200 mcg. of riboflavin per 100 gm., thus giving a loss of 8 per cent of riboflavin for the cooked fruit as compared with the raw. There was no significant loss with either method of cooking.

The failure of soda to increase the cooking losses of either thiamine or riboflavin appears to be due to the shorter cooking period needed and also to the slight increase in alkalinity of the naturally acid fruit caused by the addition of soda.

TABLE 3

Relationship of method of preparation of apricots to riboflavin content of final product

TYPE AND METHOD OF TREATMENT	NUMBER OF TESTS	CONTAINER FOR COOKING	TIME OF COOKING	pH OF SAMPLES	RIBOFLAVIN	LOSS
			min.		*mcg./100 gm.*	*%*
Raw, sun dried	3			4.15	217	
Sun dried, cooked with sugar (20 gm. per 454 gm. of fruit), dried at 45°C. to original weight, and ground	3	enamel saucepan with cover	55	4.50	200	7.8
Sun dried, cooked with water and soda (6 gm. per 454 gm. of fruit), dried at 45°C. to original weight, and ground	3	enamel saucepan with cover	35	5.00	200	7.8

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Editorial

A.D.A. PUBLIC RELATIONS PROGRAM

Members of the American Dietetic Association have grown increasingly aware, over the last decade, that the law of supply and demand has not been functioning properly within the profession of dietetics. While the demand for trained dietitians has been steadily growing, the available supply has not nearly approximated that growth.

One reason—and certainly an important one—for the growing scarcity of dietitians has been a lack of understanding on the part of many segments of the public of the vital role of the profession. As a result, fewer young women of scientific bent and interest, when confronted with the choice of a career, have been sufficiently aware of the profession of dietetics to make it their first choice.

The answer to this particular problem is not an easy one, nor does it lend itself to an easy or immediate solution. Certainly, however, one course of action was immediately suggested and undertaken —a planned program of public relations, with a heavy emphasis on vocational guidance to tell the story of dietetics in such a way that more and more young women *will* become aware of what dietetics actually does offer as a permanent career.

This is the essence of the public relations program now being undertaken by the Association. It has other objectives—keeping certain special allied professional groups, among them the medical profession, hospital administrators, educators, and the business community, informed of developments in the field of dietetics and, in general, enhancing the reputation of the profession in the public mind. The drive to interest more young women in the field of dietetics, however, remains the central core.

How is this objective to be realized?

Basically, there are three general methods by which the national committees on Public Relations and on Vocational Guidance are working toward the objective. The first is through liaison with other organizations—the American Hospital Association, the American Red Cross, the U. S. Public Health Service, and many others. With these organizations we are seeking to work out methods of mutual help. A good example of these methods can be found in our work with the American Hospital Association and The Advertising Council, an organization devoted to helping out, through advertising, radio, and other means, causes of a public service nature. Both the A.H.A. and the Council have agreed to include mention of the need for more dietitians in the campaign which is now being conducted to recruit badly needed nurses. The value of this generous support is very substantial.

The second method has been to call on the membership of our own organization. The individual efforts of A.D.A. members have been intensified through the Public Relations, Vocational Guidance, and Exhibits Committees. Through them simple, concrete, and usable material relating to the preparation and realization of radio, newspaper, and magazine publicity is being distributed to state and local organizations.

Two kits, one containing a radio interview script, a prepared speech, and a sheet of instructions on how both can gain an audience, have already been prepared and distributed. The second kit, which has also gone out to the states, contains sample news stories, some suggestions for feature stories, a simple fact sheet about A.D.A., and a sheet of instructions on how to get a news or feature story into print. These kits will make it possible for individual members of A.D.A., who might otherwise find it impossible to do so, to carry on public relations activities in their local areas with the assurance of good results.

In addition to both of these methods, public relations and publicity on a national level is also being carried on by a team consisting of our committees and our public relations counsel, the J. Walter Thompson Company. Through them news stories of the approvals of internships have been prepared and mailed to the newspapers of more than fifty cities; broadcasts have been arranged and carried out in which national officers of A.D.A. have told our story to groups of people; and certain magazines of national circulation have been provided with material about dietetics and dietitians. In addition, speeches and meetings with various A.D.A. and other interested groups have been held in all parts of the country with members of the A.D.A. Executive Board, national headquarters staff, and the J. Walter Thompson Company's public relations staff carrying their counsel into the field.

Of all of these methods, the most vital, of course, is that which enlists the whole-hearted effort of individual members of the Association. It is on this

phase of the whole program that the Association is counting most heavily. The interest, cooperation, and individual spade-work of the entire membership is the price which we must pay for success. For such a goal as we have set, that price is not too high, and we are confident that the membership of the Association will agree with us—and lend the necessary aid.

BANNED IN BOSTON?

Yes indeed, if you are thinking of bringing history books with you to the A.D.A. convention in Boston, October 18 through 22. Time and circumstance certainly will not allow reading during the convention. But, *do* read before you come, for history is the real thing in Boston, and you will want to see the Cradle of Liberty, the spot where the tea was emptied into the harbor, and the oldest college[1] in the United States.

Whether you make the trip to Boston by air, boat, rail, bus, or automobile, planning the route with stopovers in historic New England will be rewarding no matter what your interests—scenery, educational and medical centers, food industries, school lunch rooms, or the rock-bound coast.

Are you coming from the West? Routes on both the Canadian and "states" side of the Great Lakes, or one including boat travel on Lake Erie, will bring you to Albany[2], whence you can branch off toward Lake Champlain, to Vermont, to New Hampshire's White Mountains, or to Maine and come down along the rock-bound coast to Boston.

If you come directly to Boston from Albany, you will go through the beautiful Berkshires to Springfield and Worcester, with possible stopovers to see their splendid school lunch systems, public health programs, and industrial cafeterias. Near Springfield are Smith College at Northampton, the University of Massachusetts at Amherst, and Mount Holyoke College at South Hadley.

Or perhaps you would like to come via Montreal and down through Vermont.

Whatever your itinerary, a committee of dietitians from each of the New England states is preparing for you to see whatever is of interest to you professionally or as a "tripper."

Are you coming from the South? There are direct rail connections to Maine, New Hampshire, and Vermont from Washington or New York City.

If you have time in New York City, you may want to visit the United Nations headquarters at Lake Success (about a 40-min. drive from Manhattan). This trip, however, should be carefully planned so that you can attend a session and hear some of the vital questions of the day discussed. This is a huge place and much time may be lost in aimless wandering, unless you have definite directions about how to find the meeting room. The large cafeteria at Lake Success will fascinate you, for it is like a crossroads of the world where you will hear all languages spoken and rub elbows with people in colorful and varied native costumes.

If your time in New York City is brief, you might like to see the New England Village Exhibit in the East Balcony of Grand Central Station. In this exhibit, which includes a typical white New England church with a 65-ft. spire, you will see many authentic antiques of early New England days. There are also a country store, in which you can browse and examine the stock; a cobbler shop; and a small printing shop. In addition, there is an exhibit of modern New England industry with artisans actually working at their trades. A lighted oval glass map in relief is accompanied by a loud speaker describing industrial and recreational areas of New England. This exhibit will truly help to put you in the "spirit of Boston" before you arrive for the convention.

Between New York and Boston, too, there is much to see. By routing your trip via the shoreline train you may stop over in New Haven to visit its famous hospitals, industrial and school units, and Yale University; in New London to visit the Connecticut College for Women; or in Providence, where you will find excellent hospitals, schools, public health agencies, and Brown University. If you are routed through Springfield, on the other hand, you can make a stopover in Hartford, where you will want to see the school lunch system and the Aetna Life Insurance lunchrooms.

And when you reach Boston, be prepared to "trip" some more! Historic and educational Boston, Cambridge (that's where the exquisite glass blowers are), Lexington, and Concord must be seen. Or you may only wish to take a leisurely breather between sessions and go across the Public Gardens to Beacon Hill to see handsome colonial doorways and treasured panes of glass purpled by ultra violet rays of many decades.

Everything from the hallowed halls of science to the Cape Cod cranberry bogs, Gloucester fisheries, and a Boston baked bean plant await your arrival in Boston.[3]

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[1] Harvard University, founded in 1636. In 1948 the first woman professor was appointed.

[2] The number of Bostonians who think the West begins in Albany is rapidly decreasing.

[3] Better pack a pair of "trippers" as well as "spikes."

Current Comment

DIETETIC INTERNS—UNITED STATES ARMY

The United States Army is preparing to train as interns specializing in dietetics a large number of women college graduates. Throughout the training period they will be commissioned officers in the Women's Medical Specialist Corps Reserve. At or near the close of the internship each woman will be given an opportunity to apply for a commission in the Regular Army.

Details about the requirements and an outline of the training course are contained in the following announcement, issued by the Office of The Surgeon General, Washington, D. C.

STATUS OF DIETETIC INTERNS

Authority has been received from the Department of the Army to train dietetic interns on a military status. Students selected for the dietetic internship at Brooke General Hospital, Fort Sam Houston, Texas, beginning 1 September 1948 will be officers commissioned in the Women's Medical Specialist Corps Reserve, Dietitian Subsection.

The training of the dietetic intern on a military status will prepare her to accept the responsibilities required of a dietitian as a Regular Army officer. The Medical Department of the Army plans to obtain a part of the number of dietitians required for the military establishment through this training.

TERMS OF SERVICE

An individual selected for this internship must express a desire in writing to enter the Regular Army upon completion of the course.

The dietetic intern accepting an appointment in the Women's Medical Specialist Corps Reserve, Dietitian Subsection will also elect to serve a two-year period of active duty. This will include the two-month period of basic training, the dietetic internship of twelve months, and ten months of service at another Army Hospital as staff dietitian. In addition, she will be given an opportunity to apply for the Regular Army before the two-year period of active duty is completed.

REQUIREMENTS FOR APPOINTMENT

(a) *Age.* An applicant must have reached her twentieth birthday and not have passed her twenty-sixth birthday on the date of appointment in the Women's Medical Specialist Corps Reserve.

(b) *Citizenship.* An applicant must be a female citizen of the United States. If not a citizen by birth, she must produce evidence of citizenship.

(c) *Marital Status.* An applicant must be single, widowed, or divorced and without dependents under fourteen years of age.

(d) *Physical Qualifications.* An applicant must be physically qualified.

(e) *Educational Requirements.* An applicant must have completed or expect to complete, before 1 August, 1948, the requirements for a Bachelor of Science degree, including the courses which have been established for all recognized dietetic internships.

(f) *Letters of Recommendation.* Three letters of recommendation are required, one from the head of the Home Economics Department and two from instructors in major subjects.

PAY AND ALLOWANCES

Dietetic interns will be called to active duty in the grade of second lieutenant. The base pay of a second lieutenant is $180 a month, with an additional $0.70 a day toward subsistence. The dietetic interns assigned to Brooke General Hospital will also be provided quarters.

A uniform allowance of $250 will be given these officers when they report to Brooke General Hospital. The necessary uniforms and military equipment can be procured at that hospital.

ASSIGNMENT

At Brooke General Hospital, the dietetic intern will first be given a two-month course of basic military training which is required for all female Medical Department Reserve Officers entering on active duty. Then she will begin the dietetic internship of twelve months' duration. This course is approved by the American Dietetic Association.

Upon satisfactory completion of this training, this officer will be reassigned for ten months to another Army hospital as a staff dietitian. During this last period of active duty, the dietitian will be given an opportunity to apply for the regular army at a military installation designated by The Surgeon General.

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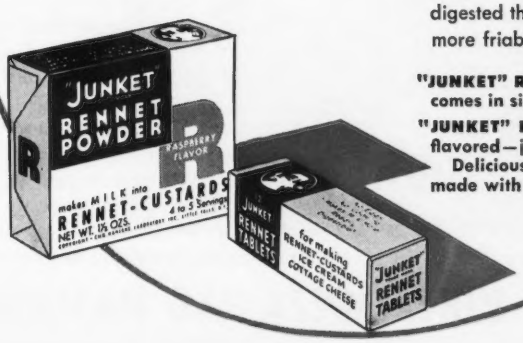

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If an intern does not meet the required standards of proficiency, she will be dropped from the course and will revert to an inactive status.

METHOD OF MAKING APPLICATION

Students desiring to make application for this course may obtain the necessary forms by writing to Chief, Dietetic Consultants Division, Office of The Surgeon General, Room 2D-528, The Pentagon, Washington 25, D. C.

RESERVE DIETITIANS—UNITED STATES ARMY

An imperative need for many more women dietitians in United States Army hospitals has been stressed by the Office of the Surgeon General. The importance of dietetics as an essential part of military hygiene is receiving more and more attention in the Army Medical Department. In recognition of this fact, Congress in 1947 enacted legislation making permanent the positions of women specialists in this field of military service.

The activities of college trained women specializing in dietetics in Army hospitals cover the whole problem of proper foods, from the selection and requisition of supplies to the serving of a well prepared and attractive diet to the patient.

The ensuing information, issued by the Office of The Surgeon General in Washington, tells women how to obtain commissions in the Women's Medical Specialist Corps Reserve and go on duty at the same time, or remain inactive, as they may select.

GENERAL INFORMATION

(a) *Previous Status of Army Dietitians.* Since World War I, dietitians have been assigned to Army hospitals. They were civilian employees of the Medical Department of the Army until 1943 when they were given temporary wartime commissions. Approximately 2000 dietitians were on duty in World War II as AUS officers. These dietitians served in the United States and every active theater of operation.

(b) *Regular Army Status—Women's Medical Specialist Corps.* With the passage of Public Law 36, 80th Congress dated the 16th of April 1947, dietitians received permanent rather than temporary military status. This act established the Women's Medical Specialist Corps in the Medical Department of the Regular Army, which consists of three sections, namely: the Dietitian Section, Physical Therapist Section, and Occupational Therapist Section.

(c) *Women's Medical Specialist Corps Reserve.* Public Law 36 also provided for the establishment of the Women's Medical Specialist Corps Reserve, Dietitian Subsection. Dietitians who did not serve during World War II may apply for reserve commissions. These commissions are for a period of five years, and original appointments remain in effect for five years regardless of duty status. Reserve officers may request extended active duty or choose to remain on an inactive status which will in no way interfere with their civilian employment.

(d) *Duties.* Under the supervision of the chief dietitian, Army dietitians are in a position to gain varied experience in all phases of hospital dietetics. The chief dietitian, now designated as the Hospital Food Service Supervisor, is directly responsible to the commanding officer of the Army hospital for the supervision and direction of the hospital food service and the operation of the hospital messes; the preparation of nutritionally adequate menus; the maintenance of highest possible standards of food preparation and service; the proper utilization of operating personnel; the establishment of uniform job descriptions, job analyses, and work schedules for personnel; the development of full range, continuous training programs for personnel; the proper use, care, and maintenance of equipment; the requisitioning, selection, inspection, and acceptance of food; and the maintenance of the highest possible standards of cleanliness and sanitation in the hospital messes.

ELIGIBILITY

(a) *Age.* Applicants must be at least twenty-one years of age for initial appointment to commissioned grade. Applicants will be appointed in the following grades provided they meet the professional qualifications:

Second lieutenant	—21 through 29 years
First lieutenant	—30 through 32 years
Captain	—33 through 36 years
Major	—37 through 44 years

(b) *Citizenship.* An applicant must be a female citizen of the United States. If not a citizen of the United States by birth, an applicant must provide evidence of citizenship.

(c) *Physical Qualifications.* Each applicant must be physically qualified.

(d) *Marital Status.* The applicant must be single, widowed, or divorced and without dependents under fourteen years of age.

(e) *Professional and Technical Qualifications.*

(1) For appointment as second lieutenant in the Dietitian Subsection of the Women's Medical Specialist Corps Reserve, an applicant must possess a bachelor's degree from a school or university acceptable to The Surgeon General, with a major in either foods and nutrition or in institution

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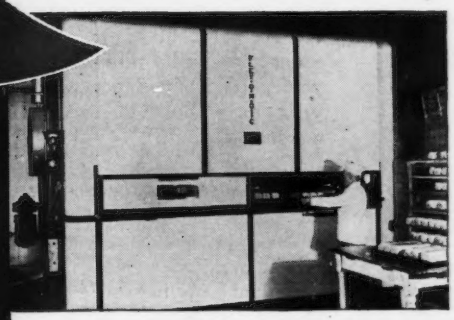
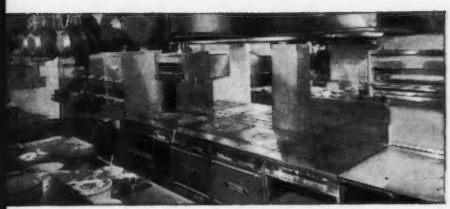
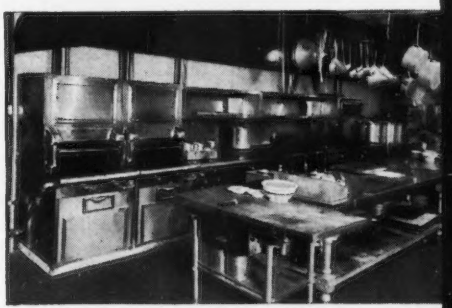


HOTEL—One of the great hotels in the Pacific Northwest installed this sparkling stainless steel GAS kitchen to meet increasing demands on its food service department ↓



YWCA—Patrons of this well-known YWCA are served Southern delicacies from this compact GAS kitchen ↓

CLUB
An exclusive eastern club, famed for its food, recently modernized its facilities by installing this modern GAS kitchen →



AMERICAN GAS ASSOCIATION

420 LEXINGTON AVENUE, NEW YORK 17, N. Y.

management, and have completed a dietetic internship acceptable to The Surgeon General. Three years of experience, one of which must have been within the past ten years, in a hospital or hospitals acceptable to The Surgeon General, may be substituted for the dietetic internship, provided that this experience included diet therapy, planning of adequate menus, supervision of food preparation and service, controlling food costs, and ordering food supplies and equipment.

(2) For appointment as first lieutenant, an applicant must possess a bachelor's degree and have completed the dietetic internship, or its equivalent, as specified above for second lieutenant. In addition, she must have had a minimum of three years professional experience with at least one year in a hospital acceptable to The Surgeon General.

(3) For appointment as captain, an applicant must possess the bachelor's degree and have completed the dietetic internship, or its equivalent as specified above for second lieutenant, and in addition must have had a minimum of seven years professional experience, three years of which must have included major responsibility in the administration of the dietary department of a hospital.

(4) For appointment as major, the applicant must have completed one year of postgraduate training in the specialty, and in addition to the dietetic internship or its equivalent must have had a minimum of eleven years professional experience, seven years of which must have been in a supervisory or administrative capacity. Not more than seven years' food management experience in commercial fields may be included in this total.

CAUSES FOR REJECTION

Persons will not be eligible for appointment if:

(a) They have been or are presently conscientious objectors.

(b) They have a record of conviction by any type of military or civil court for other than a minor traffic violation.

TERMS OF SERVICE

(a) *Inactive Status.* Appointments in the Women's Medical Specialist Corps Reserve are made for a period of five years and may be renewed every five years up to sixty years of age. Dietitians appointed in any grade of the Reserve Corps may remain on inactive status after appointment.

(b) *Active Duty.* It is imperative that the Women's Medical Specialist Corps, Dietitian Section, Regular Army, be augmented by a large group of Reserve officers serving on active duty. Dietitians appointed in the Reserve Corps in the grade of second lieutenant and first lieutenant may request immediate active duty for a period of one, two, or three years. They may remain on active duty as long as they desire, provided their services are satisfactory and position vacancies exist in Army hospitals. While on active duty as Reserve officers, dietitians will receive the same benefits to which members of the Regular Army of the same grade are entitled except that of retirement for years of service.

PAY AND ALLOWANCES

(a) *Second lieutenants* will receive a base pay of $180 a month with an additional $0.70 a day toward subsistence. Quarters are also provided.

(b) *First lieutenants* will receive a base pay of $200 a month with an additional $0.70 a day toward subsistence. Quarters are also provided.

ACTIVE DUTY ASSIGNMENT

Dietitians requesting active duty will be assigned to Brooke Army Medical Center, Fort Sam Houston, Texas, where a final type physical examination will be given. If the officer is physically qualified for extended active duty, she will remain at Brooke Army Medical Center for a period of basic training and military orientation.

Following this period, she will be assigned for duty at an Army hospital in the United States. Consideration will be given to an individual's request for station assignment whenever possible. However, dietitians will be ordered to duty according to the needs of the service. Special skills of dietitians will be utilized to the fullest extent possible. After a tour of duty in the United States, opportunity will be given for an overseas assignment.

METHODS OF MAKING APPLICATION

Persons interested in applying for a reserve commission may obtain the necessary forms by writing to Chief, Dietetic Consultants Division, Office of The Surgeon General, Room 2D-528, The Pentagon, Washington 25, D. C.

Reserve officers on active duty who have satisfactorily completed a period of service will have an opportunity to make application for the Regular Army, *provided* they have not passed their twenty-eighth birthday and they have successfully completed a dietetic internship approved by The Surgeon General.

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Book Reviews

Treatment By Diet. By Clifford J. Barborka, M. D. 5th ed. Philadelphia: J. B. Lippincott Company, 1948. Cloth. Pp. 784. Price $10.

This fifth edition of *Treatment by Diet* will no doubt be welcomed by physicians, for it retains its previous form of a brief, concise statement of the principle of each dietary regimen and many pages of diets for the practitioner to copy out for his patients. At a time when the trend is toward fewer and better diets, the author does not seem to have attempted to simplify and condense similar dietary regimens. In size, the book is larger and more cumbersome.

The book could have been better edited. There are a number of errors, such as stating that ½ cup of dry cereal weighs 105 gm. on some of the diabetic diets, and that the mineral content of the high-vitamin diet is 1000 gm. of calcium; .0152 gm. of phosphorus; and 1400 gm. of iron. There are some contradictory statements; for instance, on the lists of foods to be avoided on the diabetic and low caloric diet appear foods which are then included on the diet examples. Also, there is a statement in the discussion of vitamin A that mineral oil should not be used with food and then there appears a recipe for mineral oil mayonnaise in the appendix; and one list states that spinach, beet greens, and lettuce are potent blood builders while on the next page the statement is made that they have only slight effect. Furthermore, no credit is given for the source of the short method of dietary analysis given in the appendix.

There are some impractical suggestions made in some of the diets as far as the patient being able to follow the diet. For example, 5 per cent fruits are listed frequently on various diets, and in particular on the bland diabetic diet. This group of fruits includes melons and rhubarb. These are available for only a very short time during the year and are not generally allowed on a bland diet. The use of bran-soy muffins is also a questionable item for a bland diet. Skim milk is used frequently on a number of diets, and cream and bacon are sometimes included on the same diet. In many localities it is practically impossible to obtain skim milk. It would seem more practical to use whole milk. A square of butter is used as a household measurement on most of the diets. A more accurate measurement would be the teaspoon. One diet requires an extra two egg whites each day, an impractical and expensive means of supplying a few more grams of protein in a diet.

There are some older concepts in diet therapy which are still included, such as high-vitamin and high-mineral diets as therapeutic agents, the low-potassium diet for Addison's disease, the liver diet for pernicious anemia, the term "salt free" diet, and the emphasis on endocrine obesity.

It is to be regretted that less than one page is given to the diet in pregnancy and lactation and their complications while the next thirty-nine pages are devoted to the ketogenic diet.

Since the book is designed to supply physicians with diet outlines to give to patients, more discussion could be given to the problems of the patient in attempting to carry out a therapeutic diet in the home, to interviewing the patient and making diet histories, and to the dietary instruction of the patient. Thus the physician would realize that each diet should be planned for the individual patient and that he should *not* just be handed a copy of one of these diets. —*Doris Johnson, Teaching Dietitian, Presbyterian Hospital, New York City.*

A Guide for Community Nutritionists. By Sophie Gordon Thaw and Elizabeth K. Caso. New York: The Nutrition Foundation, Inc., 1947. Paper. Pp. 69. Price $1.

The authors have added an important item to the meager literature on community nutrition programs by collecting and arranging the material for this guide. The young nutritionist with limited experience in community work will find it especially valuable. For the interested citizen who wants a "nutshell" account of how a nutrition service functions or the executive of an agency contemplating the inauguration of such a service, the guide will supply concise information pertaining to organization, qualifications of personnel, and the place of a nutrition program in the total program of community welfare. In fact, the major emphasis of the material is on integration and wisely so, since some aspect of nutrition usually is the province of several agencies in any community.

The authors have not deviated from their purpose of writing a guide. They have presented a summary of the common experience of nutritionists, avoiding controversial questions and those procedures whose worth has not been proved. The chapter on administration is especially valuable, as are the sample forms in the appendix.

Even though each nutritionist who reads the *Guide* may have opinions not in accord with those of the authors, she will agree that a valuable beginning has been made in getting on paper a comprehensive outline of the scope of a community nutrition service, more comprehensive than is usually found in the texts on public health or welfare. All readers will be disappointed that the material on evaluation is so brief, but if they are fair-minded, they will realize that evaluation poses a question which has not been answered satisfactorily in any branch of community service.

Now that a first step has been taken, undoubtedly there will be a demand for the expansion of the material and scope of the *Guide*, and one thinks with some satisfaction that the Nutrition Foundation, being the publisher and always in the vanguard, will keep a future edition of the *Guide* as part of its work-in-progress.—*C. Frances MacKinnon, Harvard University School of Public Health, Boston.*

The Art of Italian Cooking. By Maria Lo Pinto. New York: Doubleday and Company, 1948. Cloth. Pp. 222. Price $2.75.

This book will appeal to all who enjoy good eating, whether cook or gourmet. It is valuable not only as a recipe book, but as a clue to the secret of tasty seasoning.

Miss Lo Pinto presents some of the best information she has gleaned from her grandmother's kitchen in Marineo, a village near Palermo. Spicy smells fill her nostalgic memories of the delightful aromas that intrigued her as a child. She shares with the reader some of that joy and tells how some of these pungent odors can be duplicated in one's own kitchen. She describes briefly some of the chief Italian

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festivals, gives appropriate menus, followed by the recipes. The instructions are clearly and concisely written. In a separate section she lists some of the most useful herbs, tangy Italian cheeses, types of macaroni, and a tabulated list of wines with information on the proper temperatures and courses with which each is served.

Those who like spaghetti can revel in the many variations of sauces from plain tomato sauce to fish and meat sauces. Here also are recipes for wild and domesticated fowl and rabbit, as well as the regular meat stand-bys fixed in unusual ways. Zesty soups, succulent vegetables, and delightful desserts claim their share of attention.

The terseness of the material results in a small book that is comfortably handled. The drawings of the pasta make them easy to identify.

The book ends with a detailed glossary of Italian words and names, but unfortunately a key to the pronunciation of these words is missing. This added information would lend a perfect ending to an excellent cook book.—*Marie A. Procopio, Assistant Dietitian, St. Lukes's Hospital, Chicago.*

Hemoglobin, Plasma Protein, and Cell Protein—Their Production and Interchange. By G. H. Whipple, M.D. Publication Number 12, American Lecture Series. Springfield, Ill.: Charles C. Thomas, 1948. Simulated leather. Pp. 27. Price $1.25.

This is not a review of the literature but is the author's concept of the production and interchanges of proteins, of hemoglobin, of cells, and of plasma. Based on his own extensive studies on dogs, Dr. Whipple has demonstrated that when hemoglobin is given to depleted dogs, there is a complete utilization of the globin fraction for building new hemoglobin and new plasma protein and that plasma protein can supply all body protein needs. The liver is believed to be the site of protein synthesis.—*Dr. E. Neige Todhunter Head, Department of Foods and Nutrition, University of Alabama, Tuscaloosa.*

Milk and Food Sanitation Practice. By H. S. Adams. New York: The Commonwealth Fund, 1947. Cloth. Pp. 311. Price $3.25.

As is indicated by the title, this book divides itself into two approximately equal halves. The first unit covers briefly the history and importance of proper control of the milk supply and outlines methods for administering a program designed to provide communities with milk of high sanitary quality. Examples of the types of problems examined are: possible herd infections and their respective treatments; milk house design, care of utensils, including milking machines; off flavors in milk; the pasteurization process; and laboratory procedures for milk; and frozen dessert control.

The second section of the book deals with sanitary problems of public food services. There is discussion of the food handler and the physical plant and equipment in relation to production of high sanitary quality. Suggestions are made for methods of training of food handlers. Dishwashing methods are described and evaluated. Control of insects and rodents and other relevant problems are discussed.

In general, this book is in the nature of a handbook. Discussion of theory is not extensive. The fact that the description of methods sometimes seems abbreviated is balanced by the extensive literature citations which are included. An appendix of more than fifty pages contains supplementary information on methodology, field equipment for the food sanitarian and where to obtain it, and lists of films relating to milk and food sanitation. This book would seem to contain much practical information.—*Dr. Dorothy L. Hussemann, Department of Home Economics, University of Wisconsin, Madison.*

Hospital Organization and Management. By Malcolm T. MacEachern, M.D., C.M., D.Sc., F.A.C.P., and F.A.C.H.A. 2nd ed. Chicago: Physicians Record Company, 1947. Cloth. Pp. 1052. Price $8.50.

The author of this book has a background surpassed by few people in the field of hospital organization and management because of his broad background of experience, first as a physician, then as hospital administrator, and later as a director of hospital activities of the American College of Surgeons. Dr. MacEachern states in the preface to this second edition that "added to the original purpose of this volume to aid administrators and other hospital executives who learn in the school of experience, is the new aim to serve as a text book in the courses which will provide the much-needed broad academic and practical preparation for the complex task of administering a hospital."

This comprehensive book devotes a chapter to every department contributing to the functions and operation of a hospital in the community. This edition, as the first edition, devotes its first chapter to the "History of Hospitals." One is impressed, however, throughout the entire book with the historical background interwoven throughout all chapters showing reasons for change due to changing social, economic, and scientific developments and their effect upon the hospitals of today.

The second edition has been expanded by the addition of three chapters, namely "Hospital Library," "Personnel Management in Hospitals," and "Special Hospitals." Several chapters have been expanded to include specialties developed since the first edition was published, notably the clinical department, adjunct diagnostic and therapeutic facilities, as well as the chapter on promoting and building the new hospital.

Illustrations of sample forms used in all hospital departments are presented as typical forms suggested for use. Check lists of equipment needed to meet minimum standards for approved hospitals are included for the many clinical departments, nursing department, and the dietary department. The discussion of departmental organization and operation is of a general character frequently giving alternate possibilities to make provision for flexibility in application to hospitals of varying sizes. Charts for hospital administration organization are the same as those presented in the first edition. A detailed account of organization of a board of trustees and a medical staff emphasizes this fundamental area in the management and operation of hospitals. While the author stresses the primary function of the hospital—that of caring for the sick and injured—he is also aware of the obligation of the hospital in the educational field, and the need of acceptable teaching facilities for approved training of all personnel who render service in the scientific care, as well as those having administrative responsibility to the patient. Educational standards set up by professional organizations for approved training of residents and interns in the medical departments as well as of the dietetic interns are included. Qualifications of faculty and cost considerations are also covered.

The chapter on "Personnel Management in Hospitals" comprises a very general discussion on management and policies of employment. The need for a personnel department with qualities considered essential for the director of the department are stated briefly. Employment policies and procedures, techniques, and records are referred to in a general manner for administrative recognition. Job descriptions of typical hospital positions for use in inter-hospital wage comparison from the Chicago Hospital Council are given in Addendum I. Although reference is briefly made to the recent development of the Training-Within-Industry program, no further information is given.

Because of the detailed style in which the book is written, its greatest value will probably lie in its use as a book of reference for the hospital administrator, as well as other departmental executives in the hospital organization. —*Millie E. Kalsem, Chief Executive Dietitian, Cook County School of Nursing, Chicago.*

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Few foods can surpass citrus fruits in healthful, nutritious goodness. Their ample supply of vitamin C—so indispensable for growing bones and teeth, and for the maintenance of tissue strength and vigor . . . their varied store of other essential nutrients* . . . and their rich fruit sugars, so readily assimilable for needed energy—all make them indispensable for the assurance of a well-rounded dietary.

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Current Literature

Contributed by Janette C. Carlsen and Ethel M. Miller, Dietary Department, The Johns Hopkins Hospital; Mrs. Quindara Oliver Dodge, Women's Educational and Industrial Union, Boston; Mrs. Martha Nelson Lewis, Ohio State University Hospital; and the Journal staff.

THE AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 15, March, 1948

* The effect of salicylate medication upon the urinary excretion of vitamin C. J. M. Spitzer and S. Shapiro.—p. 80.

Salicylates and Ascorbic Acid Excretion. Under ordinary nutritional conditions, ascorbic acid excretion in the urine is meager and becomes increased only after ingestion of large amounts of the vitamin. It has been reported that excretion of ascorbic acid can be increased by the ingestion of salicylate, particularly in children. Salicylate has demonstrated a prothrombinopenia-inducing activity. Because of the possible role of ascorbic acid in regard to capillary wall integrity in rheumatic fever, in which salicylates are used freely, a study was made to learn the conditions under which salicylates influence the urinary excretion of ascorbic acid. Guinea pigs, children, and adults were the subjects.

The results of this study showed a variation in the urinary excretion of ascorbic acid following the ingestion of salicylates. This variation bore no relation to the quantity of salicylate ingested, but in every instance in which the urinary excretion of ascorbic acid became elevated after salicylate medication, virus infection was either active or recent. These infections included the common cold, epidemic parotitis, and rheumatic fever. It is not known whether the changes observed in this study would be found in patients with infections due to bacterial agents. It may be concluded that at least in the presence of the viral infections mentioned here, salicylate therapy may increase the urinary excretion of ascorbic acid. It is suggested that simultaneous administration of ascorbic acid with the salicylates is rational therapy.

THE AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 38, February, 1948

A city department of health program on the improvement of mechanical dishwashing. W. L. Mallmann, L. Zaikowski, and D. Kahler.—p. 239.

Vol. 38, March, 1948

Experience in appraising nutritional status in the U. S. Public Health Service. H. R. Sandstead and E. S. Osborne.—p. 361.

* Appraising the nutritional status of mothers and infants. C. A. Smith and H. C. Stuart.—p. 369.

Nutritional Status of Mothers and Infants. Evidence is presented here that no satisfactory methods are yet available for the exact appraisal of nutritional status in individual pregnant or puerperal women and in individual newborn infants. Relations which may have statistical significance in interpreting the diet of pregnant women in groups are not always applicable to the interpretation of the state of nutrition of the individual. This is particularly true of subjects under relatively good nutritional circumstances. In more obvious degrees of starvation and malnutrition, the appraisal becomes easier. Even in those ranges, the infants will differ as shown in distribution curves constructed from measurements made upon groups. No single measurement gives promise of being especially useful; nutrition histories, physical examinations, and laboratory tests must be combined. In view of the more-than-medical significance of the problem, the absence of simple methods of appraising nutritional status of mothers and infants is an important challenge to the ingenuity of workers in obstetrics, pediatrics, and nutrition.

BRITISH MEDICAL JOURNAL

No. 4548, March 6, 1948

* Vitamin D in treatment of cutaneous tuberculosis. G.B. Dowling, S. Gauvain, and D. E. Macrae.—p. 430.

Vitamin D and Cutaneous Tuberculosis. Since 1943 heavy doses of calciferol (vitamin D_2) have been used in England in the treatment of lupus vulgaris (cutaneous tuberculosis). The report given in this paper indicates that calciferol has a marked curative effect on lupus vulgaris. How the vitamin acts is not specifically known. It appears that it is not a chemo-therapeutic agent in the ordinary sense, but may be a catalyst or an accelerator of a normal process. The threshold of tolerance is extremely variable, but the advantages of the drug seem to far outweigh its dangers. It must not be forgotten that local manifestations of tuberculosis are part of a general disease, and that the patient requires good food, air, and adequate rest in addition to such treatment as outlined in this paper.

CANADIAN MEDICAL ASSOCIATION JOURNAL

Vol. 58, March, 1948

* The plasma proteins in heart failure. S. J. Shane.—p. 274.

Plasma Proteins in Cardiac Failure. This paper discusses the physiology of fluid interchange between capillaries and tissues, demonstrates its relationship to the development of cardiac edema, and advocates high-protein diets as a therapeutic weapon in the management of congestive heart failure.

FOOD RESEARCH

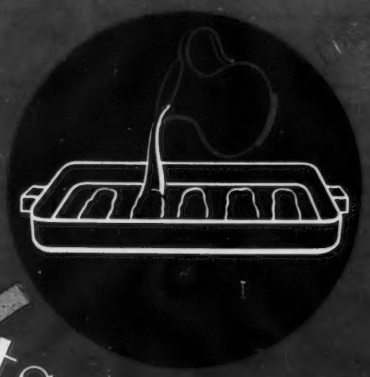
Vol. 12, November-December, 1947

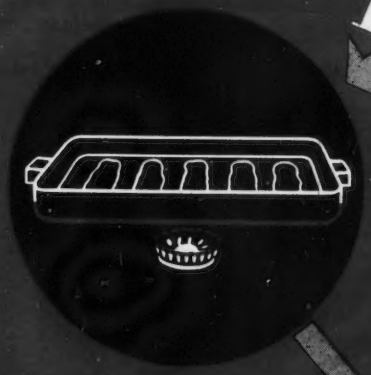
Effect of certain home practices on reduced ascorbic acid content of peas, rhubarb, snap beans, soybeans, and spinach. F. O. Van Duyne, J. T. Chase, J. R. Fanska, and J. I. Simpson.—p. 439.

* Thiamin and ascorbic acid values of raw and canned peas. O. R. Alexander and J. F. Feaster.—p. 468.

* Vitamin retention and acceptability of fresh vegetables cooked by four household methods and by an institutional method. C. K. Sutherland, E. G. Halliday, and W. F. Hinman.—p. 496.

Quintuplets





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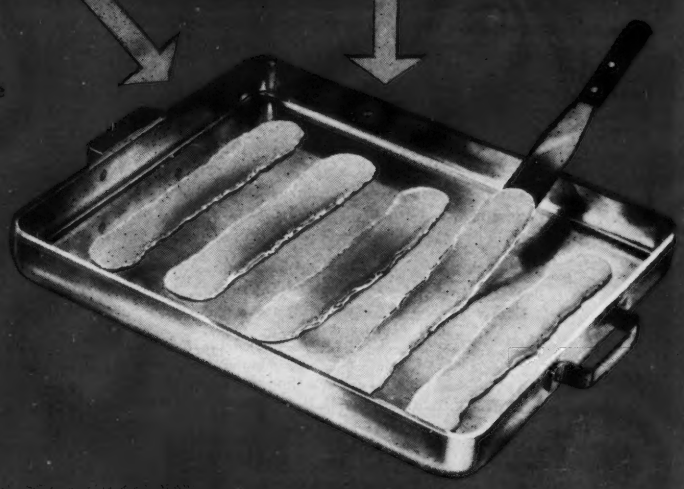

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Ascorbic acid content of strawberries. B. D. Ezell, G. M. Darrow, M. S. Wilcox, and D. H. Scott.—p. 510.

Vol. 13, January-February, 1948

Teen-age students versus adults as taste judges of Temple oranges. P. L. Harding and F. M. Wadley.—p. 6.

Vitamin Content of Peas. Except for the current nutrition program sponsored by the National Canners Association and the Can Manufacturers Institute, little recent information has been reported on the vitamin content of commercially canned foods. The survey presented in this paper was carried out prior to the above-mentioned program and is concerned with the thiamine and ascorbic acid values of market samples of canned peas. Peas were used because they make up a considerable portion of the annual canned vegetable production. The thiamine and ascorbic acid values of raw peas were determined, in addition to those on the canned peas, in order to obtain data which would reveal the extent to which variations of these values in the raw stock might be reflected in the concentrations of these two nutrients in the canned product. The experiment was repeated during two consecutive seasons.

Analyses of raw peas showed that the most significant variable was that of sieve size: the thiamine values increased with increasing sieve size and the ascorbic acid values decreased. A wide variation in the nutritive content of raw canning stocks was found. In the canned peas there was also a wide variation in the thiamine and ascorbic acid contents. This is indicated by the figures listed in one of the tables. The results of this survey suggest that none of the factors studied show any significant correlation between variety, growing locality, quality grade, or size of container.

Vitamin Retention of Cooked Vegetables. Using both household and institutional cooking methods, the ascorbic acid, thiamine, and riboflavin retentions of cabbage strips, spinach without stems, and peas were studied. Acceptability ratings of these vegetables were also determined. Four household methods were used: (a) the open saucepan, (b) the tightly covered saucepan, (c) the steamer, and (d) the pressure saucepan. For green cabbage and peas, the pressure saucepan gave the best product; for spinach both the steamer and pressure saucepan were considered satisfactory. For the comparison of an institutional method with a household method, cabbage and spinach were cooked in large quantities in a steam-jacketed kettle. Retention of riboflavin was greater than when the vegetables were cooked in small quantities, but there was no significant difference in the retentions of ascorbic acid and thiamine. However, in the case of cabbage, there was a significant loss of ascorbic acid if the vegetable was held 1½ hr. over steam.

THE JOURNAL OF LABORATORY AND CLINICAL MEDICINE

Vol. 33, January, 1948

* Nutritional status and infection response. I. Electrophoretic, circulating plasma protein, hematologic, hematopoietic, and immunologic responses to *Salmonella typhimurium* (*Bacillus aertrycke*) infection in the protein-deficient rat. J. Metcoff, D. B. Darling, M. H. Scanlon, and F. J. Stare.—p. 47.

High vitamin A intake and blood levels of cholesterol, phospholipids, carotene, and vitamins C, A, and E. J. T. Van Bruggen and J. V. Straumfjord.—p. 67.

Nutrition and Infection. A study was conducted with rats to determine the effect of protein deficiency on immunology. The protein deficiency showed up in the rats' blood stream as the blood count was lowered. However, the protein-deficient rats appeared to respond as well as the well-nourished control animals to infection with *S. typhimurium*. The conclusion was drawn that the immune response was unaltered by severe dietary protein deficiency.

JOURNAL OF PEDIATRICS

Vol. 32, March, 1948

* Food allergy. IV. The function and clinical application of the rotary diversified diet. H. J. Rinkel.—p. 266.

Food Allergy. The rotary diversified diet is presented as a therapeutic measure in allergic syndromes. The diet is summarized as: "... a diet consisting of foods for which the patient *has a tolerance*, which will include *various types* of food necessary for a well-balanced diet. These foods are used at *intervals of two to seven days*, taking one normal serving per day at *one meal only*." The diet may be used to maintain tolerance for foods which have previously caused symptoms of allergy but have become compatible after avoidance for a period of time. The diet may also be used prophylactically to prevent the development of new allergies. The diet should not be used as a substitute for diagnosis. Several case studies are included for illustration.

MEDICAL CLINICS OF NORTH AMERICA

January, 1948

* Food allergy. T. G. Randolph.—p. 245.

Food Allergy. Contrary to prevalent impressions, food sensitivity is a common cause of allergic symptoms at any age; the history cannot be relied upon to detect sensitivity to specific foods or to rule out that possibility. Skin tests with food extracts are not reliable diagnostic procedures, and food allergy not only exists to a selected group of foods, such as wheat, milk, and eggs, but may involve any article of the diet and usually does so with an expected incidence in direct proportion to the frequency of ingestion of various foods.

In diagnosing food allergy, the degree of sensitivity that exists to each major food and the extent to which the diet is involved are ascertained by the sensitization process. A highly restricted diagnostic diet may be employed with relative safety if the patient has a slight sensitivity.

The treatment usually consists of using tolerated foods on a rotary diversified schedule. The complete elimination of a food is usually associated with a gradually diminishing degree of sensitization which usually permits the food to be reintroduced into the diet eventually.

NEW YORK STATE JOURNAL OF MEDICINE

Vol. 48, February 1, 1948

*Pediatric approach to the management of allergic eczema in children. B. Ratner.—p. 296.

Vol. 48, March 1, 1948

* The role of choline chloride in the treatment of certain cases of diabetes mellitus. L. Pelner, B. Davidson, S. Waldman, and R. Margolis.—p. 523.

Vol. 48, March 15, 1948

* Intractable edema. L. Leiter.—p. 624.

Allergic Eczema in Children. The discussion of the problem of allergic eczema in children is a complicated one, not thoroughly understood. This paper offers a tentative working basis for the management of allergic cases of eczema that the general pediatrician may encounter. It discusses the use of allergenically denatured diets; the importance of careful dietary history; and environmental conditions and medications for the patient.

Choline Chloride and Diabetes Mellitus. Although the liver plays a basic role in carbohydrate metabolism, it has been neglected in the management of the diabetic patient. Fatty liver is a frequent finding in patients with diabetes, and in depancreatized dogs experimentation has shown that this condition can be prevented by administration of choline. Methionine gives the same results by supplying methyl groups for the synthesis of choline.

Pineapple Toothsome Twosome

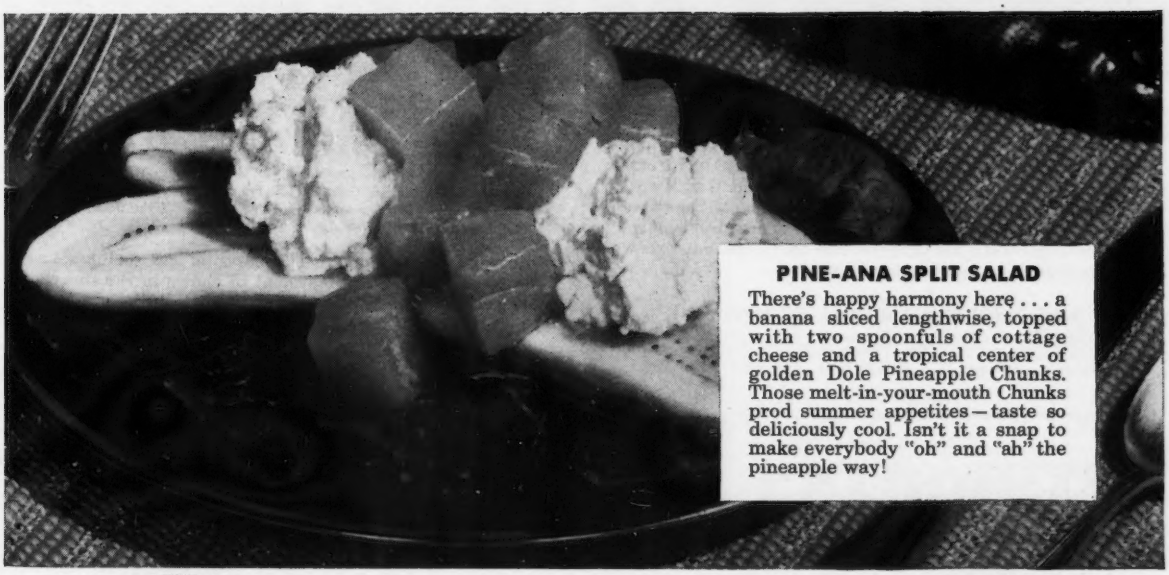
Pictured here is the way Dole assembles two popular fruits—bananas and melons—with pineapple. These timely summer suggestions are yours to feature in your current professional work. Later, readers of national magazines will see them in our full color Dole pages.

Patricia Collier
DOLE HOME ECONOMIST

Hawaiian Pineapple Co., Ltd., 215 Market St., San Francisco 6, Calif.

SUNSET FRUIT

Perfect ending to any meal! With empty pineapple can, cut rings ½" thick from watermelon heart. Top each ring with a sparkling Dole Pineapple Slice, and deck with honeydew balls, and, if desired, sprigs of mint. Serve very cold. Dole Pineapple works wonders with all sorts of fruits—try it in new ways!



PINE-ANA SPLIT SALAD

There's happy harmony here . . . a banana sliced lengthwise, topped with two spoonfuls of cottage cheese and a tropical center of golden Dole Pineapple Chunks. Those melt-in-your-mouth Chunks prod summer appetites—taste so deliciously cool. Isn't it a snap to make everybody "oh" and "ah" the pineapple way!

DOLE
PINEAPPLE PRODUCTS

Studies were made on a group of twenty-six individuals with diabetes. Each patient received 4 gm. choline daily. The diet was liberal, consisting of 250 gm. carbohydrate, 95 gm. protein, and 75 gm. fat per day. If treatment with choline was successful, improvement usually was noticed within two weeks; the blood sugar fell, and the patient gained weight and felt well. If the patient was receiving insulin, the amount was reduced and finally eliminated. Some patients were given choline for six months without ill effects. Eighteen patients were treated successfully while eight did not respond. Several case reports illustrate the dramatic response that was obtained on choline chloride therapy.

Intractable Edema. This article discusses the problems in the management and treatment of cardiac edema, nephrotic edema, pre-uremic stages of renal disease, cirrhosis of the liver, and diabetic glomerulosclerosis. It discusses the need for low-salt diets for cardiac edema and states that a palatable and varied diet can be obtained on 1.5 gm. of salt. In nephrotic edema in the adult, a high caloric, high-protein, low-salt diet is recommended. In cirrhosis, the importance of a good dietary regime is stressed. Supplements of choline, methionine, or liver extract improve the results. In young diabetics with glomerulosclerosis, the treatment follows the same line as that for nephrotic edema; that is, a low-salt, adequate-protein, high caloric diet and judicious use of diuretics.

PUBLIC HEALTH NURSING

Vol. 40, March, 1948

* "Oil can technic": A method of formula making. A. Rollins and L. Langham.—p. 141.

"Oil Can Technique" for Formula Making. Staggering numbers of Texas children, particularly infants, die of diarrhea and enteritis every year, mostly in groups where income is low and sanitation poor. In order to combat these deaths, a technique for formula preparation, adaptable for use in the poorest home, was developed. Equipment needed was one bottle for each feeding; nipples for each bottle; funnel; pitcher; bowl for mixing; can opener; bottle brush; string or rubber bands; squares of brown paper or paper caps; 5-qt. oil can with a handle made of a coat hanger; a platform made of the top of the oil can; a plate to cover the can; spoon; and mayonnaise jar for collecting soiled nipples. Directions are simple and easy to follow. The formula is prepared and poured into bottles on which in turn nipples are placed and then brown paper squares are put on for caps. Bottles are then placed in the can, which is filled with water to the level of the milk in the bottles. The can is covered and water brought to a boil and boiled 30 min. by the clock. Bacteriological studies of the oil can technique have shown the method to be most satisfactory.

NEW ENGLAND JOURNAL OF MEDICINE

Vol. 238, February 12, 1948

The nephrotic syndrome. S. E. Bradley and C. J. Tyson.—p. 223.

Vol. 238, February 19, 1948

The nephrotic syndrome. S. E. Bradley and C. J. Tyson.—p. 260.

Vol. 238, March 11, 1948

* Total pancreatectomy. E. A. Gaston.—p. 345.

Total Pancreatectomy. A case of total pancreatectomy is presented, together with analysis of similar cases as reported in the literature. Surgical mortality is now high, but with increasing experience it can be reduced to acceptable limits. Physiological changes are discussed, and it is noted that the diabetes following total pancreatectomy is mild. Because of increased insulin sensitivity, hypoglycemic reactions are severe and should be avoided. The fatty liver associated with total pancreatectomy can be prevented by a diet rich in choline. About 2 gm. choline daily are required to prevent fatty liver in depancreatectomized dogs. Because of poor fat digestion, the post-operative diet should be low in fat, the calories to be made up in carbohydrate. In addition, a 15-gm. dose of pancreatin will increase the absorption of fat and protein and aid in maintenance of nitrogen equilibrium.

PUBLIC HEALTH REPORTS

Vol. 63, March 19, 1948

* Studies of the acute diarrheal disease. XVIII. Epidemiology. A. U. Hardy and J. Watt.—p. 363.

Vol. 63, April 9, 1948

* Control of trichinosis. Report by the committee on public health relations, The New York Academy of Medicine.—p. 478.

Studies of the Acute Diarrheal Disease. The epidemiology of the acute diarrheal diseases was studied in New Mexico, Georgia, New York, and Puerto Rico. Cultures of the stools of the children who died from diarrheal diseases in New Mexico and Georgia were made, and 75 per cent were found to contain Shigella. There was strikingly little evidence that these enteric infections were disseminated by water, milk, or other food. Finger contamination and relatively direct, person-to-person contact appeared to be chiefly responsible for the dissemination of these infections in institutional and military groups.

Control of Trichinosis. Data presented in this report emphasize that trichinosis is a significant public health as well as an economic problem. Information is given as to the relation of trichinosis to meat inspection. Three of the most effective methods of preventing transmission of trichinae to human beings are reviewed. They include the following: (a) microscopic inspection of pork, (b) boiling of garbage fed to hogs, and (c) processing of pork by some acceptable method—heating, curing, or freezing. The committee which made this study has made five specific recommendations to the Commissioner and the Board of Health of New York City in order that the danger of recurring outbreaks of trichinosis may be reduced. They also recommend that steps be taken to stimulate fundamental research on the potentialities of quick freezing as a method of processing pork.

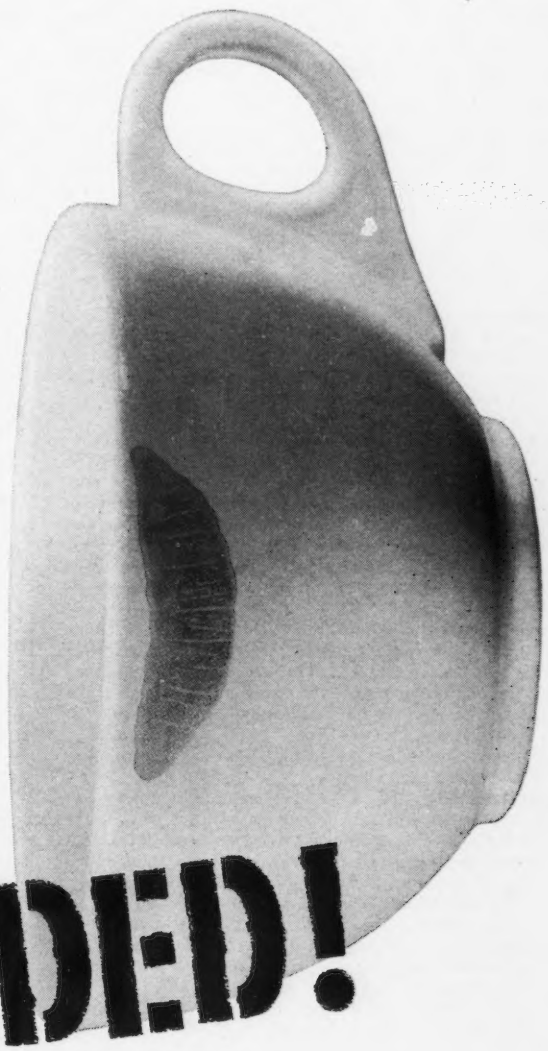
SOUTHERN MEDICAL JOURNAL

Vol. 41, March, 1948

* The proper role of subtotal gastrectomy in the treatment of chronic gastric and duodenal ulcer. L. Grove and E. Rasmussen.—p. 255.
* Recent advances, etiology and therapy of cirrhosis of the liver. H. B. Hulholland and T. S. Edwards.—p. 269.

Subtotal Gastrectomy. The subtotal gastrectomy has been recognized as the treatment of choice in the surgical management of most chronic gastric and duodenal ulcers. The technique of gastrectomy has been well standardized, and the mortality should not exceed 2 to 3 per cent. Post-operative care of subtotal gastric resection may vary greatly with individuals. Fluid intake is maintained by intravenous infusions of 5 per cent glucose. A high caloric, bland diet with between-meal feedings is prescribed on the third to fifth day. The patient usually must continue on this schedule or he will lose weight.

Cirrhosis of the Liver. The modern conception of the treatment of cirrhosis of the liver is presented. The diet is the most important therapy, but adjuncts, such as intravenous or intramuscular crude liver, may be important. The use of low-salt diets and agents now available in the treatment of heart failure may occasionally be helpful. It is not necessary to restrict fats in the diet if the carbohydrate and protein intake is high enough. Emphasis is placed on the importance of long continued therapy.



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AMERICAN RESTAURANT MAGAZINE

Vol. 32, March, 1948

* Make your lights pay dividends. T. Trail.—p. 42.
* Coffee service can be a fine art . . . or a fine mess. J. B. O'Meara.—p. 50.
* How it all began and how its' going along.—p. 96.

Vol. 32, April, 1948

Thriftier ways with pork. J. A. Cline.—p. 80.
* Keep fires off the menu. M. Maloney.—p. 82.
Why not cater to travelling tots. D. E. Lane.—p. 110.
Better coffee means better business. E. W. Fair.—p. 144.

Restaurant Lighting. This article is the second in a series on restaurant maintenance. No food service organization can afford to neglect lighting maintenance, because bad lighting may suggest a similar degree of carelessness in the food preparation and serving departments. Instructions for maintenance are given.

Coffee Service. A good cup of coffee served properly takes time and skill. Therefore, its preparation should be entrusted to skilled employees. Common causes of poor coffee are: stale coffee, unclean urn or coffee bag, water not hot, improper repouring, prepared coffee held too long, and improper proportions. Coffee should be served in clean, unchipped cups and dry saucers. Sales may be increased by providing cakes, cookies, or rolls during the between-meal periods

Smoked Turkey. Popularity of smoked turkey began with its approval by the King and Queen of England while visiting the United States. The art of smoking turkey originated in Germany 150 years ago, and the secret was brought to this country and made popular during the war when food delicacies were short. Whole smoked turkeys, sliced turkey, and turkey paté have now become popular items throughout the country.

Fires Are Costly. With the American public unaware of the great loss resulting from fires in restaurants, we stumble along and pay the price in cash, lives, and equipment. A fire prevention program cannot be started and then dropped if it is to be of value; it must be maintained at all times. Grease on stoves causes 30 per cent of restaurant fires; overheated stoves cause 17 per cent; and neglect of employees who smoke on the job results in 18 per cent of restaurant fires. Good housekeeping is synonymous with fire prevention for it means a constant check of all connections, fixtures, and appliances with immediate removal of accumulated rubbish and paper. Regardless of all precautions, there may be a fire; hence accredited fire protection equipment should be available and in good condition. Fire precaution backed by fire prevention can help build immunity from fires for any food service organization.

HOSPITAL MANAGEMENT

Vol. 65, March, 1948

* A simplified system of food purchasing, inventory, and costs. E. S. Hedgecock.—p. 96.
What dried fruits can do for jaded hospital appetites. I. L. Dolan.—p. 104.
* The place of cereal germs in the hospital diet. A. C. Johnson.—p. 110.

Food Purchasing. The purchasing system described here is based on the competitive method used in many state and city purchasing organizations. It may be used equally as well in private hospitals or institutions. A somewhat detailed description is given of the procedure and the forms used.

Cereal Germs in the Hospital Diet. This is the first of three articles which will appear in subsequent issues on the subject of cereal germs. Introduction of wheat germ and corn germ in the hospital diet is relatively new to hospital cookery. The discussion here is limited to the regular diet and the various foods that are allowed on such a diet.

THE HOTEL MONTHLY

Vol. 56, February, 1948

The outlook for hotel supplies in 1948. C. A. Tibbetts.—p. 51.
* Better food tomorrow through scientific food research today.—p. 55.
Benefits for you in institution test kitchens.—p. 62.
Plastic sealant guards glass block from damage.—p. 80.
* Difference in trimmed meats shown at Pfaelzer meeting.—p. 94.

Better Food Through Research. Since June, 1947, when the Associates of the Food and Container Institute was founded, this organization has made valuable contributions to scientific information on foods. One hundred and twenty-five projects are being carried out in colleges, universities, research foundations, and industrial laboratories throughout the country. The results are coordinated and distributed from a headquarters maintained in connection with the offices of the Food and Container Institute of the Armed Forces in Chicago. As a result of some of these projects, the following developments are described: (a) a foil-wrapped bread that is palatable after three months' storage; (b) a canned bread; and (c) improvements in the handling, storage, and reconstitution of frozen foods. Investigations are being made of egg breakage and of a spray-drying process to prevent rancidity and scorching in dried eggs. Food panel acceptance tests, investigation of the "browning" reaction in foods, fat deterioration, the microbiological aspects of food deterioration, and electronic cooking are only a few of the other projects described.

Trimming Meats. Closely trimmed meats assure closer control of food cost. Certain bones, sinews, and portions with little edible value that are left in many standard trims are eliminated in more closely trimmed cuts. These closely trimmed cuts not only aid in the control of food cost, but they can be relied upon for specified quality and weight average in portions that weigh alike. Taste, too, will be uniform throughout.

THE MANAGEMENT REVIEW

Vol. 37, February, 1948

How to prepare office manuals. H. L. Wylie.—p. 69.
* Getting results from the exit interview. E. G. Michaels.—p. 77.
The selection of supervisors. M. Mandell.—p. 79.

The Exit Interview. The exit interview can be a source of valuable information to an organization interested in improving efficiency and public relations. However, fear on the part of department heads and supervisors, often resulting from misunderstanding of the objectives of exit interviews or from poor consultative management techniques, may defeat the purpose of the program. The author of this paper suggests the type of exit interview program which should be most effective and emphasizes the importance of cooperation of all supervisors. Some discussion is given to the type of information which should be recorded during or immediately following the exit interview.

THE MODERN HOSPITAL

Vol. 70, March, 1948

* The merits of a rating plan. D. C. Edmonds.—p. 80.
* We need a new perspective on hospital food service. E. J. Kahrs.—p. 112.
* The functional basis of hospital planning: refrigeration equipment.—p. 114.

Merit Rating of Employees. A merit rating program is an important part of personnel administration. There are several types of merit ratings, but the scale and check list programs are believed to be the most effective. An illustration of a typical merit rating form of the check list type is given in the article. In addition, eight points which are important to remember in administering a rating program are listed.

MEAT
And the Surgical Patient

New knowledge regarding the significance of protein imbalance in the presence of surgical affections has profoundly influenced the management of the surgical patient.

Many conditions calling for surgery, such as peptic ulcer, cancer of the gastrointestinal tract, affections of the biliary tree, or bowel obstruction, may lead to protein imbalance. Severe burns and major traumas usually are associated with considerable protein loss. The operative procedure, intended to correct the situation, initially only adds to the protein drain.

The protein-deficient patient is always a poor surgical risk, predisposed to shock and more vulnerable to infection and other complications. Gastrointestinal anastomoses, for instance, may fail to function properly because of edematous occlusion of the stoma. Healing may be seriously impaired and convalescence delayed.

To make the patient a better risk, and to accelerate recovery, diets high in biologically complete protein are now routinely instituted before elective surgery is undertaken. Convalescence appears to progress better when a high protein diet is speedily resumed postoperatively.

Protein losses or deficiencies should be corrected by oral feeding of natural foods whenever feasible.

Meat, an excellent, highly digestible source of biologically complete protein, is particularly desirable in the patient's diet. It is usually well tolerated before surgery and can be given after surgery as soon as solid foods are permitted.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

American Meat Institute

Main Office, Chicago...Members Throughout the United States

Hospital Food Service. This paper reviews the accomplishments that have been achieved by dietitians and in hospital dietary departments. Some suggestion is given of what is desirable in the way of the physical plant for the dietary department. Selection and placement of equipment is considered, too. Special attention is given to the personnel of the dietary department, and the author stresses the need for a staff of qualified dietitians. In regard to recent alterations in kitchen equipment, the necessity for radically increased refrigeration space is emphasized. Some discussion is given to the question of centralized versus decentralized tray service.

Refrigeration Equipment. The report given here is a continuation of a study made by the Division of Hospital Facilities, U. S. Public Health Service. Specifications for walk-in refrigerator boxes are given. Mention is also made of flake ice machines and of refrigerated drinking water systems.

THE NATION'S SCHOOLS

Vol. 41, March, 1948

Initiating an audio-visual program. W. A. Bass.—p. 56.
Uniforms make better employees.—p. 60.
* Insurance reduces dish breakage. J. Krenwinkel.—p. 64.

Dish Breakage. A few years ago the Skokie School Council undertook to find the best means of dealing with problems arising from the breakage of dishes in lunchrooms. The result was the organization of an accident insurance company by the school which would insure its members against financial loss from accidental breakage of dishes. Any citizen of the school—child or adult—could purchase a policy and share in the company management. Through this organization plan, members of the student body obtain experience in practical arithmetic needed to make adjustments for breakages, in selling policies, in collecting and disbursing money, and in keeping accounts that balance. The students learn to keep careful files of all their transactions and learn the value of keeping accurate minutes of meetings and of making corrections when the minutes are read and inaccuracies are found. The operation of this insurance plan resulted in a marked decrease of dish breakage in the cafeteria and lunchrooms. Now that the initial experiment in owning and operating an accident insurance company has proved successful, interested students are exploring the possibilities of extending the company's services to cover other school risks and of selling other kinds of insurance.

PERSONNEL

Vol. 24, January, 1948

A pattern for improved supervisory leadership. J. M. Pfiffner.—p. 271.
* The supervisor and the suggestion system. C. C. Gibbons.—p. 284.
The use of tests in American industry: a survey. J. M. Lishan.—p. 305.

Vol. 24, March, 1948

* A guide to successful conference leadership.—p. 328.
* Evaluation of a training program in operation.—p. 372.

The Suggestion System. The merits of the suggestion system are pointed out in this paper which stresses particularly the part which the supervisor plays in making such a system work. Attention is given to such problems as encouraging workers to submit suggestions, deciding on the value of suggestions, putting suggestions into effect, and the manner of informing employees of adoptions or suggestions. Because suggestion systems often exclude supervisors, a solution to this problem is presented. The need for training supervisors to solicit, evaluate, and use the suggestions of employees is emphasized.

Guide to Conference Leadership. This article, the first in a series of two papers on the subject of conference leadership, is part of a digest of a manual used in a highly effective course in conference leadership. It should prove especially helpful to dietitians developing their own training programs for food service employees. The role of the conference leader is pointed out, and ten qualities of leadership are discussed. Steps to take in pre-conference planning are outlined, and preparation of the conference plan is discussed and illustrated. Concrete suggestions to help make a conference successful are included in this digest. One very helpful section is devoted to actual illustrations of situations which may confront a conference leader and indicates techniques and procedures which have been found to be effective in dealing with such situations.

Evaluating a Training Program. A series of criteria for appraising the effectiveness of training programs have been prepared by the Philadelphia Federal Council of Personnel Administration. These check lists are illustrated in the article. The following factors are considered: (a) organization of the training unit, (b) administration, (c) supervision, (d) instruction provided, and (e) determining the results of the training unit in operation. It is pointed out that these check lists are not only useful in the evaluation of existing programs but also as a guide in setting up new ones.

PERSONNEL JOURNAL

Vol. 26, March, 1948

* Keep your executives and supervisors informed. A. R. Laney, Jr.—p. 321.
* Checking the applicants' references. C. W. Books.—p. 329.
Survey of professional salaries. M. J. Sunderland.—p. 332.

Keeping Supervisors Informed. Since 1944 the personnel department of a public utility company has been investigating methods of keeping all supervisory employees informed on company affairs. Results of this survey were summarized and sent to other organizations. Many responses were received, and a number of the suggestions that were made are written up in this article. In addition, the details of the Master Conference Plan, which received more favorable comment than any of the others described, are listed.

Employee References. Five methods of obtaining and checking new applicants' references are: merit rating form; letter seeking general information; telephone inquiries; outside investigating agencies; and the card form. One Pennsylvania company recently adopted the card form as the most economical means of obtaining dependable results. They want to know whether the applicant will be a desirable employee, but they rely on their own interview and tests to judge the applicants' qualifications. The card asks for information on dates of employment, the position held, attendance record, how well he was liked by co-workers, the rate of progress, voluntary or requested resignation, would the employer reemploy the person in the same position, and the previous employer's rating of the applicant as an employee. They have found this to be the most effective method of getting information about an applicant and the most accurate. It is quick, inexpensive, convenient, and time saving, for both the past and prospective employer.

PRACTICAL HOME ECONOMICS

Vol. 26, March, 1948

* Frozen cooked foods—a new career opportunity. E. DeMariano.—p. 180.
Evaluation technique for meal management. M. R. Wilson.—p. 182.
* Are you putting ideas to work? M. S. Plewes.—p. 187.
School lunch menus and quantity recipes. M. L. Cronan.—p. 188.

Vol. 26, April, 1948

* Nutrition and cancer. H. N. Kingsley.—p. 258.
Canning preview. L. H. Wallace.—p. 259.
* Is avocado in your vocabulary? E. Platt.—p. 261.
* Let's look at equipment. M. L. Cronan.—p. 265.

HERE'S HOW POST'S INDIVIDUAL CEREALS HELP HOSPITAL DIETITIANS

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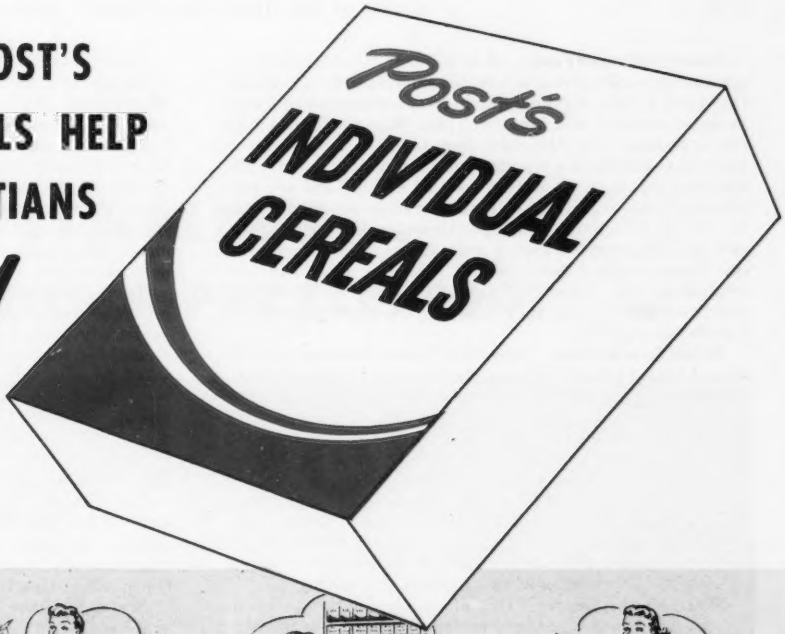

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...TALK ABOUT GENERAL FOODS!

Career in Frozen Foods. A new career in foods has developed as the result of recent advances in frozen food cookery. On March 8, 1947, the first shipment of frozen cooked foods, prepared, cooked, and frozen at Trans-World Airlines kitchens in Kansas City, Missouri, took to the air. The initial aim was to establish a standard of high quality food for the company's planes. Nearly 6 tons of edible food are prepared each week in Kansas City and transferred to planes at New York, Pittsburgh, Chicago, Albuquerque, Los Angeles, and San Francisco. Varying methods are used to "restore" the frozen cooked food, which must be equal to the original in color, flavor, and texture. Many problems face this new food field, and they challenge the home economist's knowledge and skill.

School Lunch Ideas. New ideas for the progressive manager of a school lunchroom may be obtained from the following sources: (a) routine observations; (b) staff and employees; (c) school and community groups; and (d) current publications, such as professional periodicals, recent books, local, state, and national food service, and educational organizations, government publications, newspapers, radio programs, and material from food industries and equipment manufacturers. The ideas obtained should not be forgotten but put into writing and organized in chart form so they can be used to best advantage. A sample chart is given to show the possibilities of this method of planning.

Nutrition and Cancer. One of the eight laboratories in the country devoted entirely to cancer research is the McArdle Memorial Laboratory on the campus of the University of Wisconsin. Here a series of experiments has been carried out which relate to the importance of nutrition during the critical period of cancer development. The results of these studies have demonstrated that a continuously high level of blood sugar in animals during the critical period makes it easy for tumor cells to develop into cancer. On the other hand, a restriction of the caloric intake cuts down the incidence of cancer. In this connection, however, it has been shown that diets poor in essential factors may aid in the development of cancer. There seems to be a direct relationship between a deficiency of riboflavin and the formation of liver tumors. It is evident that the restriction of calories should be done wisely and not at the expense of essential food factors. Several studies on both animals and human beings are described to emphasize the effect of nutritional status on the development of cancer.

Avocados. The story of how avocados, the type grown in California and called Calavos, are grown and marketed is given here. Several interesting salad suggestions using avocados are included.

School Lunch Equipment. Minimum equipment is listed for the rural school lunch, the intermediate school serving about 100 to 300 pupils, and the large city school. The author tells what is new in equipment, and two pages of the article are devoted to photographs of new equipment for school lunchrooms.

WHAT'S NEW IN HOME ECONOMICS

Vol. 12, March, 1948

* A day in the life of a Red Cross nutritionist. F. Marley.—p. 36.
* A variety of foods and recipe ingredients. D. E. Shank.—p. 52.
* A variety of products.—p. 54.
A home economist plans meals on a liberal budget. E. A. Wood.—p. 56.
* Buying canned fruits and vegetables. W. S. Pendergast.—p. 118.

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* Present status of home economics.—p. 38.
The dairy industry on parade. D. E. Shank.—p. 42.
* How do you sound as you say it?—p. 52.
* How do you look as you say it?—p. 54.
How to choose, how to process, how to package, how to use frozen foods.—p. 69.
Buying groceries for the school lunchroom. W. S. Pendergast.—p. 106.
* New chiffon cakes make news. J. Kelley.—p. 138.

Red Cross Nutritionist. Some of the current problems being met by Dorothy L. Bovee, Director, Nutrition Service, Washington, D.C. Chapter of the American Red Cross and an A.D.A. member, are described. Special attention is being given to nutrition education for children, correlating it with other school subjects. Adult education also is part of the job of the Red Cross nutritionist. Individual conferences with homemakers take up a considerable part of Miss Bovee's time, and she receives many calls from school principals, librarians, nurses, and case workers for exhibits and demonstrations on low-cost, yet nutritive foods.

Recipe Ingredients. This is a handy reference which gives the source and identifying characteristics of products commonly used in food preparation. Descriptions are included for sugars, sirups, candies, jellies, preserves, nuts, salad dressing, chocolate, cocoa, flavorings, and the more common cooking items, such as cornstarch, gelatin, yeast, baking soda, and baking powder. How is "instant" coffee made? What is molasses? What are creams and caramels? What is the difference between salad dressings and mayonnaise? These are a few of the questions answered.

The Use of Various Foods. This article consists of a chart which lists the same foods mentioned in the preceding article. It explains the use of each food and describes its effect on the product with which it is incorporated. A number of interesting food combinations are suggested.

Status of Home Economics. The November, 1947 issue of *What's New in Home Economics* carried a series of questions concerning home economics. One question was: "If home economics is progressing in your area, to what do you attribute this progress?" The discussion presented here contains a summary of the answers received. Consideration was given to each of the following: (a) reaching out into the community, (b) adult education classes, (c) new equipment, (d) cooperation among home economists, (e) interest of business in home economics, (f) promotion by magazines of the professional and consumer type, (g) increased emphasis on homemaking as a career, and (h) increased opportunities for work in home economics.

Another question was also reviewed: "If home economics is standing still or retrogressing in your area, what steps do you think should be taken to correct the situation?" Answers included the following suggestions: (a) administrators must be sold on the profession, (b) offering home economics to boys helps to publicize the profession, (c) parents need to know more about it, (d) cooperation of adult classes and the P.T.A. is helpful, (e) more time is needed for classes, and more teachers and home economists are needed.

How Do You Sound? This article is in line with the present emphasis on public relations in our profession. It is clearly pointed out that the impression we create among our colleagues and in the community is largely determined by our speech habits. Eight speech requirements, formulated by Dr. Karl F. Robinson of the School of Speech, Northwestern University, are listed. The speech course for students whose major subject is home economics at Northwestern University is described. Anyone who is to make a speech and is in the need of speech improvement is advised to get supervised training. The value of wire recordings is emphasized. The article concludes with an excellent bibliography of books on speech improvement.

How Do You Look? Six pictures are given which show the more common stances taken by women speaking to groups. These humorous pictures cleverly illustrate what not to do as a member of your vocational guidance speakers' bureau.

Chiffon Cakes. The story behind the discovery of chiffon cakes is told here. Furthermore, the problems involved in perfecting the recipe so that anyone could make it successfully are explained. To summarize the outstanding characteristics of the chiffon cake, its ten differentiating qualities are enumerated.

VITAMINS...
ARE STILL A PUZZLE, TOO!

Just where *do* vitamins fit into the puzzle of human nutrition?

Knowledge of the subject has advanced phenomenally in the past two decades. But more needs to be learned. For example, trial-and-error findings have revealed vitamins as ineffective in certain pathologies.

Even today, with the field of valid application narrowed, research continues apace. Research to determine minimum and optimum needs in human diet . . . and to uncover the mechanism by which vitamins perform their functions in human metabolism.

To promote better nutrition, Sugar Research Foundation has been supporting projects of a fundamental nature . . . designed to estimate more accurately the role of the B-complex vitamins in the metabolism of the carbohydrates. Information about these investigations will be sent on request.

SUGAR RESEARCH FOUNDATION

A NON-PROFIT INSTITUTION

52 Wall Street, New York 5, N. Y.

News Notes

A. D. A. Dues May No Longer Be Waived. During the war, when many members of the American Dietetic Association were serving in the armed services, the Executive Board of the Association decided to waive the dues of those members serving overseas. This practice has been continued until the present. Today, however, very few members are now overseas, and at the February meeting of the Executive Board, it was decided that beginning with the 1948–49 year, dues for such members will no longer be waived.

Loan Fund for Dietetic Interns. At an Executive Board meeting of the Pennsylvania Dietetic Association in March, a loan fund was established to aid dietetic interns to finance their training. It was felt that by using some of the Association's surplus funds, college graduates majoring in nutrition could be encouraged to complete the year's internship necessary for hospital dietitians.

A Committee on "A Scholarship Loan Fund for Dietetic Interns" was appointed. Members who would be impartial, both in regard to the recipient or the internship, were chosen.

Applicants will be recommended by college course directors and will be chosen on the basis of need, merit, and character. An applicant is free to choose any approved hospital internship and will be free to accept a position in the field of dietetics anywhere she chooses upon completion of her training.

Information concerning the amount, duration, form, and security of a loan is being sent to all directors of approved internships in Pennsylvania and to the home economics departments of colleges in Pennsylvania.

New FAO Officers. The second session of the Council of the Food and Agriculture Organization of the United Nations met for two weeks in April in Washington. At this meeting, Norris E. Dodd, Under-Secretary of Agriculture for the U. S., was chosen to succeed Sir John Boyd Orr as Director General. Sir Herbert Broadley, Deputy Secretary of the British Ministry of Food, was appointed Deputy Director-General. At this meeting, the Council also admitted Turkey and Ceylon to membership, bringing the total to fifty-seven nations.

One of the final acts of the Council was to designate Washington as the place where the fourth annual session of the FAO Conference will be held, beginning November 15. The next session of the Council will be from November 1 to 15.

Awards Go to A.D.A. Members. When the winners of the 2nd Annual Food Service Contest conducted by *Institutions* Magazine were announced at the National Restaurant Association Convention in Cleveland in April, three A.D.A. members were among those honored. One of the four Grand Awards (silver plaques on oval bases) went to Marion D. Floyd, Chief Dietitian, and Director of the Approved Dietetic Internship at Massachusetts General Hospital, Boston.

Two other A.D.A. members also received recognition for their food production operations. Sister Mary Edwarda, Administrative Dietitian at St. John's Hospital, St. Louis, was presented with one of the twenty-one Awards of Merit, and Sister M. Hildegard of St. Francis Hospital, Peoria, Illinois, receive an Award of Honorable Mention.

Institute for School Lunch Managers. The second state-wide School Lunch Manager Institute will be held at the University of Mississippi July 19 through 31. It will be sponsored by the State Department of Education, the State Board of Health, and the Home Economics Department of the University. Class work will cover the following topics: how to plan school lunch meals; how to purchase foods in quantity; lessons in basic cookery; the meaning of nutrition; managing and scheduling work; keeping up with records and reports; practical work in the large quantity food laboratory; working with parents and teachers; and the use and care of equipment. A certificate will be given for the two weeks' work.

Errata. In the April issue of the JOURNAL, the dates for the meeting of the American Home Economics Association to be held in Minneapolis were incorrectly given as July 21 to 24. The correct dates are *June* 21 to 24.

American Institute of Nutrition Awards. At the annual dinner of the American Institute of Nutrition held in the Jefferson Hotel, Atlantic City, March 16, the Mead Johnson and Company Award for work on the B-complex was presented to Dr. Fritz Lipmann, Head of the Biochemical Research Laboratory of Massachusetts General Hospital. He was selected for the award for "his work on the identification of pantothenic acid as a component of coenzyme A and to the recognition of its biochemical role in enzymatic acetylation and in the biological oxidation of acetic acid." Dr. Lipmann recently received the Carl Neuberg Medal of the American Society of European Chemists and Pharmacists for this same work.

A second award presented at this dinner was the Borden Award. This year it went to Dr. Charles A. Cary, Chief, Division of Nutrition and Physiology, Bureau of Dairy Industry, Department of Agriculture.

Officers for 1948–49 for the American Institute of Nutrition, elected at the Atlantic City meeting of the Federation of American Societies for Experimental Biology are: President, E. M. Nelson; Vice-President, C. G. King; Treasurer, N. R. Ellis; and Secretary, J. H. Roe.

New Appointment for Dr. Bessey. Dr. Otto A. Bessey recently became Professor and Chairman of the Department of Biological Chemistry at the University of Illinois Medical School. Dr. Bessey is widely known for his investigation in the fields of biochemistry, nutrition, and public health, and is perhaps best known to physicians and nutritionists for his precise chemical methods, particularly for determining vitamins and their application to studies on health and nutritional status of large groups of people.

C. A. Elvehjem Honored. Announcement has been made that Conrad A. Elvehjem, well-known biochemist in the field of nutrition, and Dean of the Graduate School, University of Wisconsin, will receive the 1948 Nicholas Appert Award for outstanding research in foods. This award is given by the Chicago section of the Institution of Food Technologists.

Chicago to Organize Nutrition Department. Announcement has been made of the loan by the Elizabeth McCormick Memorial Fund of the services of Dr. Adelaide Spohn as Director of the newly established Nutrition Department of the Chicago Department of Health.

Food Clinic Receives Publicity. In the spring issue of *The Pennsylvania Hospital Bulletin*, the hospital's Food Clinic is featured. Written by Martha Alderman Hunscher, Director of the Food Clinic, the article deals with the methods of operation of the Clinic, stressing the ways in which its services can be used in cooperation with other outpatient clinics. One of the new services of the Food Clinic which promises to develop into large proportions is the evaluation of dietary histories. These are used by the physician as an aid in making more accurate diagnosis and recommendations for therapy.

For the DIETITIAN . . .

A MEAT SUPPLY SERVICE

that's DISTINCTLY different

Have you often wished you might specify precisely the kinds and cuts of meats you want . . . and have those specifications rigidly adhered to?

You CAN; and, as a consequence, achieve greater economies of time and work, lower food costs, and an even higher standard of food service.

Pfaelzer Brothers have pioneered to its present perfection a specialized, PERSONALIZED SERVICE that has proven to be *the* answer to today's meat-buying problems. This service is "tailored" to satisfy *specific* requirements.

Unlimited resources . . . thoroughly modern facilities . . . an experienced staff of highly-skilled technicians with an understanding of, and a sincere interest in the dietitian's problems . . . all these add up to a PERSONALIZED SERVICE whose popularity is demonstrated by its ever growing number of dietitian users.

Your patients, staff and employees will be delighted with the greater eating satisfaction our service affords. You will be impressed with the LOWER FOOD COSTS, our eight PLUS VALUES insure.

You specify. We comply. Give our PERSONALIZED SERVICE a trial. You'll find it's the *modern* way to buy . . . meats, poultry, and food specialties.

CHECK LIST OF
PFAELZER'S
EIGHT PLUS VALUES

- √ ***A COMPLETE LINE*** of "tailor-made" meats, poultry, food specialties.
- √ ***UNIFORM QUALITY and WEIGHT AVERAGES.*** You receive every time, only as much meat as you order and the quality and weight averages you specify.
- √ ***DRY AGING*** enhances flavor and tenderness, absorbs meat's excess moisture, minimizes cooking shrink.
- √ ***EXPERT CUTTING, ECONOMY TRIM,*** by meat cutting specialists, insure less suet, fat, and bone waste, maximum number of servings per cut, greater value per dollar spent.
- √ ***U. S. GOVERNMENT INSPECTION*** insures product wholesomeness.
- √ ***U. S. GOVERNMENT GRADING,*** a further assurance that you receive the exact quality you buy.
- √ ***THOROUGH PACKING and DRY-ICE*** refrigeration insure arrival in sanitary, fresh condition.
- √ ***FAST, ON-TIME, FREQUENT, PREPAID*** delivery to your door . . . a great ordering convenience.

Write for copy of our MEAT BUYER'S Guide and Price List; pamphlet "Your Hospital and Good Food." Tear off and mail the convenient coupon TODAY!

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THE HOUSE OF PERSONALIZED SERVICE
America's Finest Meats and Poultry

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Hospital Dept., Union Stock Yards, Chicago 9, Illinois.

Gentlemen: Without obligation, send me a copy of your: ☐ Buyer's Guide and Price List ☐ Pamphlet, "Your Hospital and Good Food." ☐ Have your representative in this area call.

Hospital Name.....

Dietitian's Name.....

City.....State.....

Children's Bureau Publications. The U. S. Children's Bureau of the Federal Security Agency has recently revised several of its publications. Single copies may be obtained free of charge by writing the Children's Bureau, Washington 25, D. C. Included in the list are the following booklets of interest to dietitians and nutritionists:

Breast Feeding
Baby's Daily Time Cards
Road to Good Nutrition

Also, a new booklet by the Children's Bureau, prepared in cooperation with the Department of Agriculture, has just been released. It is titled *Foods Your Children Need* and is also available free.

New Government Recipe Booklets. Three new booklets have been prepared and published by departments of the government.

The first, *Money-Saving Main Dishes*, prepared by the Department of Agriculture, will be used to point up the continuing need for food conservation. Already more than a million and a half copies have been distributed. It is a forty-eight-page menu and recipe booklet combined, and contains 150 recipes for meat and meat substitutes.

The second publication is *Peanut and Peanut Butter Recipes*, which gives directions for using these two products in about thirty different ways, including soup, main dishes, vegetable dishes, breads, cakes, sandwich fillings, salads, salad dressings, sauces, and desserts. Both of the above booklets are available free of charge from the Office of Information of the Department of Agriculture, Washington.

The third booklet is *Basic Fish Cookery* which has been prepared by the Fish and Wildlife Service of the Department of the Interior. It, too, is available free on request. In addition to many recipes planned to serve six, the booklet describes various types of fishery products, offers help in buying fish and shellfish, and shows how to prepare fish before cooking.

Revised Booklet on Budgeting the Food Dollar. For several years, Household Finance Corporation has had as part of its series of consumer's helps a booklet titled *Money Management—The Food Dollar*. This excellent publication has recently been revised to bring it up to date. Twenty-five copies may be obtained free once a year by a club or one department of a high school or college.

Reprints Available. The Department of Maternal and Child Health of the School of Public Health, Harvard University, Boston, has recently mimeographed a list of reprints which may be obtained on request. The list includes fourteen published papers which report studies on maternal and child health conducted by that organization. This list may be obtained by writing to Bertha S. Burke, Assistant Professor of Maternal and Child Nutrition.

Food Supplies. The following foods are expected to be plentiful in June, according to the Production and Marketing Administration of the Department of Agriculture:

Fresh produce and fruits

Cauliflower
Celery
Grapefruit
Lemons
Oranges
Potatoes, Irish
Spinach

Canned foods

Apple juice
Apples
Applesauce
Fruit spreads
Grapefruit juice
Grapefruit segments
Honey
Orange and grapefruit juice blended
Orange juice
Peanut butter
Peas (lower grades)
Potatoes, sweet
Prunes, fresh (purple plums)
Pumpkin
Tomato catsup
Tomato juice
Tomato paste
Tomato purée

Miscellaneous foods

Eggs
Fish, fresh and frozen

In addition, the following are expected to be *relatively* plentiful in the month of June:

Ducks (Northest region)
Lima beans (frozen)
Peas (frozen)

Guide for Estimating Meat Yields. The Department of Agriculture has worked out a handy guide to show the number of servings that may be expected from a pound of the different cuts of meat. It is as follows:

Much bone or gristle: 1 lb. yields 1 to 2 servings, or less. Examples: shank, brisket, plate, short ribs, spareribs, breast of lamb or veal.

Medium amount of bone: 1 lb. yields 2 to 3 servings. Examples: whole or end cuts of beef round, veal leg or shoulder, ham with bone in, steaks, chops, roasts from the loin, rump or rib sections.

Little bone: 1 lb. yields 3 to 4 servings. Examples: center cuts of beef round, pork shoulder, or ham, lamb or veal cutlets, chuck.

No bone: 1 lb. yields 4 servings. Examples: ground meat, boneless stew meats, liver or other variety of boneless cuts.

Egg Grades. The Department of Agriculture grades eggs according to quality, not food value, although eggs offer high quality protein, iron, vitamin A, riboflavin, thiamine, and vitamin D. The two top grades of eggs—AA and A—should have a large amount of firm white and a round upstanding yolk. These eggs are preferred for poaching, frying, and cooking in the shell. Grade B eggs have thinner whites and somewhat flatter yolks, but are satisfactory for scrambling, baking, and general cooking purposes. The Grade B eggs have the same food value, but may cost as much as 10 to 12 cents a dozen less than Grade A eggs of the same weight.

The Department of Agriculture marketing specialists have worked out the following comparisons to help buyers of food: One dozen eggs, large size, give 1½ lb. of food for use as a meat alternate; 8 large eggs give 1 lb. It will, therefore, be readily seen that when large eggs sell for 60 cents a dozen, they furnish protein food for 40 cents a pound, because the shells, which are the only waste, weigh little compared to bones and other waste in meat.

Weight of eggs by the dozen, as set up for grading, are as follows: "Extra Large" eggs might weigh at least 27 oz.; "Medium" eggs, at least 21 oz.; and small or pullet eggs (seldom on the market except in the late summer or fall), at least 18 oz.

Food Consumption in U. S. The Bureau of Agriculture Economics of the Department of Agriculture has released some comparative statistics of food consumption in this country in 1947 and in 1935–39. Not only are we eating 16 per cent more food now, but we are eating different things. Last year we ate less bread and other cereal products and fewer potatoes, as well as fewer apples and less dried fruit, less butter and shortening, and less lamb and mutton. We ate more citrus and other fruits and vegetables. Ice cream consumption was 100 per cent more than in 1935–39; use of cheese was up 29 per cent last year over prewar; and we drank 17 per cent more milk and cream. Other foods which enjoyed more popularity last year were: chicken, up 30 per cent over prewar consumption; eggs, 27 per cent more; and beef and pork, 23 per cent more.

Army Announcements Concerning Personnel

The following Medical Department Dietitians were promoted during March, 1948:

First Lieutenant to Captain

Forsythe, Lois M., R-10039
Hall, Merle M., R-10013
Hobson, Edith M., R-10042
Miller, Dot., R-10085
Moore, Sue W., R-10009
Swartz, Dorothy L., R-10008
Ward, Marguerite E., R-10012

Second Lieutenant to First Lieutenant

Alexander, Elizabeth, R-2490
Cook, Marion E., R-2480
Hambleton, Martha R., R-2502
McGary, Virginia E., R-2501
Orleman, Nancy, R-2497
Pope, Elizabeth, R-2499
Ratcliff, Agnes J., R-2517
Sullivan, Jean C., R-2493
Watson, Claire M., R-2516

The War Department has released the following official list of names of Medical Department Dietitians (not previously announced) who have been separated from service:

First Lieutenants

Petersen, Elna C., R-2357, Box 63, Buellton, Calif.
Meng, Caroline T., R-2136, Ghent, Ky

Second Lieutenant

Greenhouse, Ethel I., R-2282, 235 Fifth Ave., Leavenworth, Kans.

Q: Which bread helps you solve the greatest number of dietary problems?

A. ***Ry-Krisp—the crisp whole-rye wafer, has many dietary uses. For instance—***

Ry-Krisp—in obesity diets
Only 23 calories in each double-square wafer. Yet Ry-Krisp supplies the protein, minerals, and B complex vitamins of whole-grain rye. Ideal bread in low-calorie diets.

Ry-Krisp—in allergy diets
Contains only whole-grain rye, salt, and water. A safe, unleavened bread for patients sensitive to wheat, milk, eggs.

Ry-Krisp—as a corrective for common constipation
Ry-Krisp's whole-rye bran and regulating minerals make it a natural corrective when insufficient bulk is the cause of common constipation. Its high percentage of unavailable carbohydrates further encourages normal elimination.

Ry-Krisp—to stimulate teeth and gums
Crisp, crunchy Ry-Krisp provides exercise teeth and gums need.

Ry-Krisp—as an ever-ready every-meal bread
A tempting addition at mealtime. Ry-Krisp is airy-textured, light, golden-crisp. Wax wrapped to prevent loss from staleness. Ry-Krisp *keeps* crisp!

FREE TO YOU

Reducing Booklets: "Design for Reducing." Contains 1200-calorie diet for women, 1800-calorie diet for men. "Through the Looking Glass." Provides 1500-calorie diet for overweight teen-agers. Both booklets contain menus, special recipes.

Allergy Diets, Eleventh Edition: A booklet for your files containing single copies of Wheat-free, Egg-free, Milk-free, Wheat-Egg-Milk-free and Restricted Diagnostic Diets. You may order free diet pads as you need them.

RY-KRISP SPECIAL
9-Lb. Institutional Package Economical
...four wafers cost about one penny!

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Please send, no cost or obligation:
..... copies of C566, "Design for Reducing."
..... copies of C966, "Through the Looking Glass."
..... C2143, Allergy Diets booklet.

Name.....
Title.....
Hospital or Organization.....
Street.....
City..... *Zone*..... *State*.....

But since 1945 the average American has been spending a larger *proportion* of his income on food than he has done before.

Baby Foods. Figures compiled by the Department of Agriculture show that in 1935 the average baby (child under three years) ate only about 2 lb. of canned baby food. By 1939 he was eating 13 lb., and statistics show that last year the consumption was 45 lb. per child. Strained and chopped fruit seem to be the most popular baby foods. According to the latest figures on canners' stocks, fruit products ranked first—about half of the total stocks—followed by vegetables which comprised some 28 per cent. Meat products amounted to 11 per cent, and desserts, custards, and puddings made up the remainder.

More Skim Milk Used for Food. Gerson Levin of the Bureau of Agricultural Economics of the Department of Agriculture recently reported that this country is now making much better use of its milk supply than it did before the war. Today we use more skim milk for food—almost two-thirds of the total supply, compared with half in prewar years. More of the total milk supply is being sold as bottled milk and more is going into whole milk products today than before the war, less is being used in the manufacture of butter. Last year about 29 billion lb. of milk went into such whole milk products as cheese, canned milk, ice cream, and dried whole milk, while only 12 billion lb. were used annually before the war. In contrast, only 27 billion lb. were used to make butter last year as compared to 35 billion lb. prewar.

Last year 40 billion lb. of skim milk went for feeding animals and for other non-food uses, such as casein products like buttons, or was wasted. Before the war this figure was 50 billion lb.

What Does the Housewife Know About Nutrition? Half of the homemakers know little about nutrition, according to a survey recently conducted in Richmond, Virginia, by the Bureau of Agricultural Economics of the Department of Agriculture in cooperation with the Virginia Nutrition Committee. Questions were asked of 400 representative homemakers—both white and Negro. On the average, two homemakers in each of 200 city blocks were questioned. Results showed that only 4 per cent had adequate information on nutrition, 46 per cent had some information, and half had none. Among the 400 homemakers interviewed, 77 per cent reported a food problem. Of this group, 97 per cent said that this problem was caused by high food prices. It was also found that only about half provide adequate daily meals for their families, in terms of the Basic Seven. Age, education, and income level appeared to be related to the homemakers' interest in nutrition. Women under forty-five years of age showed more interest than older women, and those with high school and college training were more interested than those with less schooling. A large proportion of the women were interested in new recipes and ways of preparing food, but showed much less interest in nutrition, fundamentals of cookery, and proper buying of food. To learn the best means of getting facts about foods and nutrition to the average homemaker, the women were asked their sources of information. Ninety per cent placed newspapers and magazines highest on the list of helpful sources of nutrition information. Next to the press, the radio was the chief sources of ideas in this field, and it seemed equally effective among different groups, regardless of age, education, race, or income. It is interesting to note that mothers of almost half of the children attending school attributed some nutrition information to their children's experience in school.

New Horizons for Rice. Dr. Walter M. Scott, Director, Southern Regional Research Laboratory of the Department of Agriculture, has stated that he believes salad or cooking oil could be developed from the bran and polish removed from rice in milling. The bran and polish comprise about 10 per cent by weight of the rough rice and contain a large amount of valuable oil which up to now has not been recovered. Dr. Scott estimates that as much as 20 million lb. of high-grade oil might be recovered annually from the U. S. rice crop, which in recent years has risen to 70 million bu. The newer knowledge of oilseed processing makes this a practical possibility, but there has as yet been almost no research on processing or industrial uses for this oil or its by-products.

Ascorbic Acid of Strawberries. Tests of different varieties of strawberries

Blodgett
FIRST AGAIN WITH MONEL
Ovens
The No. 959, one of 22 Blodgett models now also available in Monel
Now you can buy Blodgett's De Luxe No. 900 Series ovens in #35 MONEL, including complete exterior and all interior surfaces normally subject to corrosion (except shelves). This gleaming, polished metal adds to Blodgett's other famous features: Longer life Greater beauty Amazing cleaning ease Freedom from service worries. Write today for descriptive folder.
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50 LAKESIDE AVE. BURLINGTON, VERMONT

The high cost of living is too high for all of us

We worry about the high cost of living as much as you do. When prices are high, fewer people can afford to buy. That's not good for our business—or *any* business.

So we are doing everything in our power to keep prices *down* and quality *up*. The ablest men from all our companies meet at a round table once each month to plan new and better *methods* as well as better *products*. National Dairy research works with them, always seeking *top quality at lowest possible price*.

Here are some figures which show how milk prices compare with food prices, from 1939 to 1947:

Increase in cost of food 106%

Increase in cost of fluid milk . . 63%

Notice that milk has not increased nearly so much as the average of other foods. Our profit from all of our milk divisions averaged less than ½ cent per quart of milk sold in 1947—far less than the public thinks business makes—and much less than the average profit in the food industry.

When you're watching your food purchases, remember that milk—nature's most nearly perfect food—gives you more for your money than anything else you can eat. We see to it that milk, cheese, butter, ice cream, and other products made from milk are fine and pure. *Then we make them available at the lowest possible prices to the greatest number of people.*

An impartial national survey shows that most Americans consider 10%-15% on sales a fair profit for business. Compared to this, the average profit in the food industry is less than 5%. And National Dairy's profit in its milk divisions in 1947 was less than 2%.

Kraft · Sealtest · Breyers

NATIONAL DAIRY
PRODUCTS CORPORATION

made by the Department of Agriculture have shown that the ascorbic acid content varies with both the variety and the growing conditions. Berries exposed to normal sunshine contain considerably more of the vitamin than those which ripen in the shade. One series of tests showed that berries grown in normal sunshine averaged 41 per cent more ascorbic acid than those which were lightly shaded and 53 per cent more than those which grew in heavy shade. It was also found that half ripened berries picked and held until fully red increased in ascorbic acid content but not as much as those ripened on the plant. The light and sunshine of the last week before harvesting were particularly important in the production of ascorbic acid, it was found.

Staking Tomato Plants Increases Ascorbic Acid. At the Maine Experiment Station, recent studies on ascorbic acid in tomatoes have shown that tomatoes from vines which have been staked and pruned are richer in ascorbic acid than those which are allowed to grow along the ground because the staked fruit gets more sunshine during ripening. This is important to many families who rely on tomatoes—both fresh and home-canned as the principal source of ascorbic acid in the diet. Previous studies have already shown that the greatest influence on the ascorbic acid content of any variety of tomatoes is the amount of sunlight they receive before harvesting.

Quality of Home Frozen Vegetables. Tests made at the New York State Experiment Station have shown that peas and snap beans frozen in home freezing cabinets have as fine a flavor and color and are as high in vitamin content as those frozen by more rapid commercial methods. Vegetables frozen in 8 hr. have much larger ice veins through the tissues than those frozen in 2 hr. for commercial purposes. However, after cooking, experienced judges could neither see nor taste any difference, and the vitamin content was similar. Though slower freezing has been thought to make some vegetables mushy and others tough and fibrous, the tests showed no evidence of this.

A warning is given, however, against packing a large number of unfrozen and, therefore, relatively warm packages closely together in the freezer, because this may slow up freezing enough to start spoilage. In a freezer of 15 cu. ft. capacity or larger, from twenty to twenty-five pint or pound packages can be frozen. They should be staggered along the bottom or placed up in one side or end of the box with air space between to hasten the freezing, rather than placed on top of already frozen packages.

To Thaw or Not to Thaw Frozen Meat. Work at the Minnesota Experiment Station recently reported by Isabel Noble shows that equally satisfactory results may be obtained from frozen meat by thawing before cooking or by putting the meat on to cook while still frozen, provided cooking time and temperature are adjusted accordingly. Unthawed meat needs considerably more time to cook and demands a moderately low temperature so that the meat can thaw in the first part of the cooking and cook to the desired degree of doneness. A beef roast put in the oven frozen takes from two and a half to three times longer to cook "rare" and as much as four and a half times longer to cook "well done" than a thawed or fresh roast. Slow and fast-thawed meat give equally good results in cooking, with no differences in flavor, juiciness, and shrinkage.

Although exact times for thawing cannot be given because of the variables of size, shape, thickness, and other characteristics of the meat, the following are rough approximations: a 4-lb. roast takes from one and one half to two days to thaw in the refrigerator and 8 to 10 hr. at room temperature; a 1-in. steak takes overnight to thaw in the refrigerator, but only about 4 hr. at room temperature. A frozen, 1-in. steak takes three times as long to cook "rare" and four and a half times as long to cook "well done," as a thawed or fresh steak. Frozen pot roast will need 45 min. to 1 hr. longer to cook than a thawed or fresh pot roast cooked by dry heat. Unless plenty of time and a moderately low heat is allowed for frozen meat, the outside may be overdone and the inside still frozen.

MAKE IT A 100% BREAKFAST

. . . with the PLUS nourishment of Enriched 5 Minute "Cream of Wheat"

Here's the basic BIG FOUR of sound breakfast planning—fruit juice, whole milk, buttered toast . . . PLUS the favorite hot cereal, Enriched 5 Minute "Cream of Wheat," with its PLUS food values:

IRON. A generous bowlful of this smo-o-o-o-th, delicious cereal provides *all* the blood-building Iron needed in the daily diet!

FOOD-ENERGY. "Cream of Wheat" contributes abundant wheat food-energy to help this complete breakfast supply ¼ to ⅓ of the day's food-energy requirement.

CALCIUM AND PHOSPHORUS. Enriched 5 Minute "Cream of Wheat" supplies a useful amount to supplement the Calcium and Phosphorus of whole milk.

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FREE! Valuable nutrition material: **1.** Vitamin Food Chart; **2.** Recipe Folder; **3.** Baby Leaflet; **4.** Special Diet Folder; **5.** Quantity Recipe Cards. Write (stating quantity needed) to: The Cream of Wheat Corporation, 747 Stinson Blvd., Minneapolis 13, Minn.

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BEVERAGE BASE

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available in Orange, Lemon and Lime Flavors

12-Oz. Can Makes 4 Gallons of Beverage

This can when packed contained 7.69 GMS. of VITAMIN C (Ascorbic Acid) and .0649 GMS. VITAMIN B_1 (Thiamine Hydrochloride).

The FINISHED BEVERAGE, made according to directions on label, will contain 120 MGS. VITAMIN C, 1.0 MG. of VITAMIN B_1 and 116.3 CALORIES, TO EACH 8-OZ. GLASS.

This provides 100 and 400 per cent respectively of the adult minimum daily requirements for VITAMINS B_1 and C.

19 OUNCES of FRESH NATURAL, tree-ripened FRUIT JUICE was used in the making of this 12-ounce can of DEHYDRATED SUNWAY BEVERAGE BASE.

Sunway Beverage Base makes it possible to supply nutritious beverage juices at a moment's notice in hospitals, institutions, etc. A beverage base that furnishes high nutritional values of citrus juices and of ascorbic acid and thiamine hydrochloride . . . at a minimum of expense.

These delicious new dehydrated fruit juice flavors are developed by a new and exclusive process and are **Easy to Prepare**—just add water and sweeten.

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Sunway Beverage Base has been accepted by the Council on Foods and Nutrition of the American Medical Association.

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News of State Associations

California Dietetic Association. On February 17, the *Bay Area Section* of the California Dietetic Association met at the Stanford University Hospital Nurses Quarters, San Francisco, to hear Marjorie Heseltine, Director, Nutrition Unit, Children's Bureau, Washington, D. C., speak on "Public Health—The Meeting Ground for Dietitians and Nutritionists." At the March meeting, members enjoyed a dinner at the Steward Hotel, San Francisco. Dr. Thomas E. Barrett, Director, Professional Division, and Chief, Physical Medicine and Rehabilitation, Veterans Administration Branch 12, was guest speaker. His topic was "The Scope of Physical Medicine." He told about the role physical medicine plays in the rapid recovery of all types of patients and in the prevention of complications. He described the program now being carried on in the Veterans Administration for the treatment of tuberculous and paraplegic patients by physical medicine. On April 1, the Bay Area Section met at Mt. Zion Hospital, and on April 9, members heard John Van Zant, representative of J. Walter Thompson Company, public relations representative for A.D.A., discuss the public relations program of the Association.

Members of the *Los Angeles Section* met on February 2 for a dinner meeting with the Home Economists in Business, the Home Economics Club, and the Los Angeles Advertising Women's Club. The dinner was in honor of Marjorie Husted, the original Betty Crocker. Mrs. Husted described the growth of her organization at General Mills from a staff of one to forty persons, and also the means used to reach homemakers. She also showed a film which illustrates the various types of work carried on in her department. At the regular February meeting, held at Children's Hospital, Dr. Frank Platche, Chief, Metabolic Clinic at Children's Hospital, spoke on diet as related to disease. He stressed the importance of a psychological approach to diabetic, epileptic, obese, and other patients, and the role dietitians play in such situations. Juanita Kenefick of the staff at Children's Hospital, made an appeal for cooperation in the campaign to prevent waste. The March meeting was held at Wadsworth General Hospital, Veterans Administration Center, where dietitians heard Dr. Roger Egeberg, Chief of the Medical Service of the VA Center. He included a discussion of developments in diet therapy since 1900 and pointed out the present-day diets which he feels are controversial. These include: (a) use of high-protein, high-carbohydrate, low-fat diets for cirrhosis; (b) Schemm diet (low-salt and acid-ash) for heart and liver ailments; (c) low-sodium and Kempner rice diets for hypertension; and (d) low-cholesterol diets for older persons. L. Jean Murdock, dietitian in charge of the Diet Therapy Clinic at VA Center, interpreted the diets which Dr. Egberg mentioned and told of their uses and success in the hospital.

The *San Diego Section* held a meeting on February 9 at which John Doubenmier of the San Diego County Hospital spoke on "Hospital Administration and the Dietitian." For the March meeting, members met at the Scripps Nurses Home to hear Dr. Sherrill of Scripps Metabolic Clinic speak on "Diabetes."

Illinois Dietetic Association. The annual spring meeting of the Illinois Dietetic Association was held May 6 at the Palmer House in Chicago in cooperation with the Indiana, Wisconsin, and Michigan Dietetic Associations. In the morning a program on public relations was given, with three speakers: "Public Relations for the Dietitian" by J. Stewart Hunter of J. Walter Thompson Company; "Public Relations: An Individual Responsibility" by Lida Jamison; and "The Dietetic Intern and Public Relations" by Beverly Hallback. This was followed by a report of the national Association's activities by Adelia Beeuwkes, Community Nutrition Chairman of A.D.A. The afternoon session was devoted to a discussion of vocational guidance. Adelia Beeuwkes spoke first on "The Dietitian and Her Community." She was followed by a panel discussion on the scope and potentialities of dietetics as a profession which included the following talks: "Research" by Margaret H. Brookes, University of Chicago; "Hospital Dietetics" by Leila Colwell, Evanston Hospital, Evanston, Illinois, and Mary Agnes Bergin, Milwaukee County Hospital for Mental Diseases, Milwaukee, Wisconsin; "Clinics (Therapeutic)" by Mame Dentler, Northwestern University; "Commercial and Industrial Food" by Isabel Peterson, Swift & Company; and "Education" by Cecilia Schuck, Purdue University.

The preceding day the Illinois, Indiana, Michigan, and Wisconsin Dietetic Associations joined forces to sponsor one session of the annual three-day Tri-State Hospital Assembly, also held in Chicago. Adeline Wood, Food Controls Consultant, presided at this meeting which was devoted to the subject of reduction of labor costs through efficient personnel procedures. Speakers were: Bertha Biltz, A.D.A. Administrative Adviser, who spoke on "Guide to Establishing a Training Program in the Dietary Department." She was followed by George N. Saum, whose subject was "Job Evaluation—Grading and Wage Scales." The last speaker of the afternoon was Wilma Robinson, Division of Hospital Construction and Services, Illinois State Department of Public Health, who discussed "Labor Saving and Efficiency Through Equipment and Planning."

Indiana Dietetic Association. On April 9 and 10, the Indiana Dietetic Association held its annual spring convention at the Hotel Washington in Indianapolis. The convention opened with registration and visits to exhibits in the

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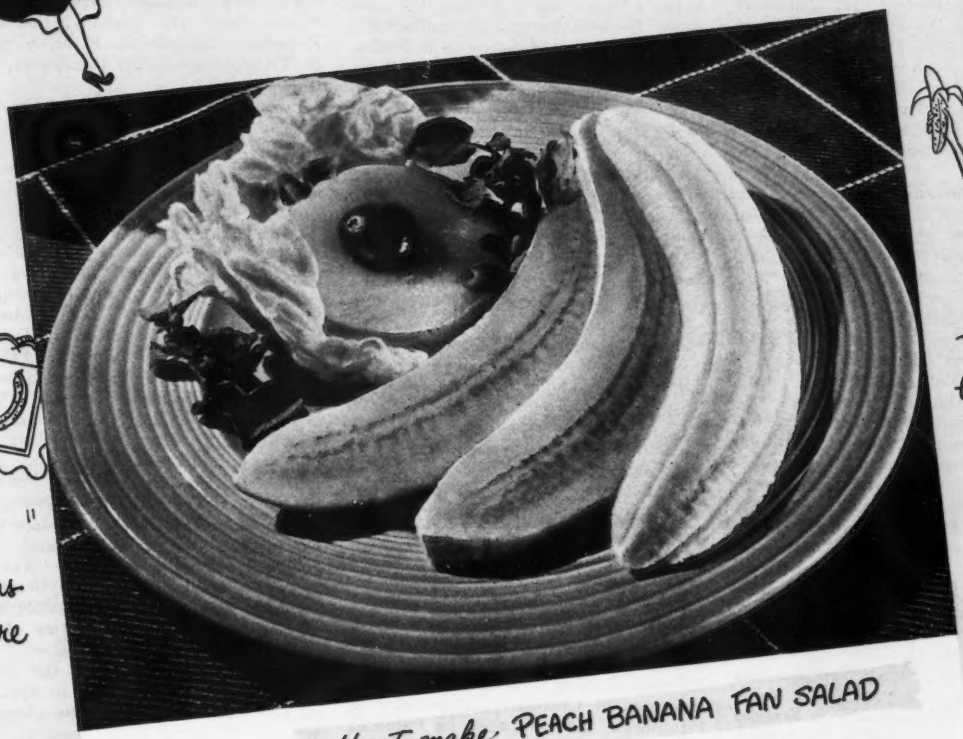

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How to make PEACH BANANA FAN SALAD

(1 Large individual serving)

½ peach
Lettuce
Berry or cherry
1 ripe banana
Watercress or parsley

Place peach half into a crisp lettuce leaf and arrange at back of salad plate. Garnish with berry. Peel and cut banana lengthwise into 3 slices and place across front of salad plate. Spread slices open to resemble a fan. Garnish with crisp watercress or parsley.

Serve with a sweet or tart dressing.

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Ideal salad for your lunch-room and cafeteria, too

Bamboo Room. A welcoming luncheon was held at noon in the Gold Room. During the afternoon session, Dr. Laura Hare of Indianapolis spoke on "Treatment of the Diabetic from the Viewpoint of a Private Physician," and Dr. Kenneth G. Kohlstaedt of Indianapolis talked on "Use of Low-Sodium Diets in the Treatment of Cardiovascular Disease." At the banquet in the evening Marshall D. Abrams, Managing Director, Construction League of Indianapolis, gave an address on "Our Occupation of Japan." On Saturday morning, Ruth Yakel of the Indiana University Medical Center presided at a diet therapy panel. Fern Gleiser, A.D.A. Treasurer, spoke on "Association Affairs," and Mrs. Walter J. Twiname, Home Economist of Kingan Company, talked on "Meat Cookery."

Maryland Dietetic Association. The annual meeting of the Maryland Dietetic Association was held at the Southern Hotel, Baltimore, on May 1. The morning session included a report by Alma Bering, Chief Dietitian, Sheppard and Enoch Pratt Hospital, Towson, Maryland, of the UNESCO Conference held in Mexico City last November. Judith Gold, Dietitian, Johns Hopkins Hospital, Baltimore, reported on the Dietetic Institute sponsored by the American Hospital Association which was held in Buck Hills Falls, Pennsylvania, in April. Julie Dickinson, representative of the J. Walter Thompson Company, spoke at the luncheon on "Public Relations and the Dietitian." Phyllis Rowe, Director of Dietitians, Johns Hopkins Hospital, discussed affairs of the national Association.

In the afternoon, Richard Griffith, administrator of the West Baltimore General Hospital, gave a talk on "An Administrator's Observations," which was followed by a discussion by Frances Gibson, Chief Dietitian of City Hospitals, Baltimore, and Harvey Weiss, Executive Director of Sinai Hospital, Baltimore. "Health and Nutrition Education in Selected Baltimore Schools" was given by Elizabeth Clemons, representative of the Education Section of General Mills, Inc., and Dr. Lillian Davis, Director of Health Education, Baltimore City Schools.

At the business meeting which closed the convention, the following officers were elected for 1948–49: President, Mary Reinhardt, Mercy Hospital, Baltimore; President-Elect, Edith Jones, Johns Hopkins Hospital; Vice-President, Eleanor Wilkinson McCarl, Baltimore; Secretary, Sybil Bangs, West Baltimore General Hospital.

New Jersey Dietetic Association. Princeton Inn, Princeton, was the scene of the annual spring meeting of the New Jersey Dietetic Association held on April 29. The theme of the meeting, which was planned by Janet Jardine, was "Community Nutrition." A tour of Princeton University, including the dining halls and kitchens, preceded the dinner, at which speakers gave their views on the importance of presenting nutrition information in the community.

On March 25 New Jersey dietitians and hospital administrators were honored at a luncheon held by the New Jersey Hospital Association. S. Margaret Gillam and Mary deGarmo Bryan were speakers on the occasion. Miss Gillam's subject was "The Organization and Management of the Dietary Department," and Dr. Bryan spoke on "Reducing Labor Costs."

On May 7, over station WAAT, New Jersey's largest radio station, the New Jersey Dietetic Association conducted a program titled "Dietetics as a Profession." Planned by Sophia Morris, Chairman of Professional Education, dietitians representing various phases of dietetics talked about their work.

North Dakota Dietetic Association. The third annual spring meeting of the North Dakota Dietetic Association was held at Fargo on May 3 in the Home Economics Building of North Dakota Agricultural College. A banquet at the Graver Hotel followed the afternoon meeting.

North Dakota dietitians have been invited to attend the first conference of the newly organized Upper Midwest Hospital Association which is being held in Minneapolis June 2 to 4. On June 2 and 3 a special program for dietitians is being planned, and at a general session of the conference, the topic of "Public Relations" will be discussed.

Pennsylvania Dietetic Association. On April 29 and 30, the annual meeting of the Pennsylvania Dietetic Association was held at the Hotel Schenley in Pittsburgh. At the opening session Dr. Richard McCoy, Associate Research Professor of Chemistry, University of Pittsburgh, gave a paper on "Recent Developments in Nutrition," and Dr. C. W. Elkins, Attending Physician, Allegheny General Hospital, and Assistant Professor of Medicine, University of Pittsburgh, talked on "The Application of New Discoveries in Nutrition to Liver Disorders."

The following day, four programs were planned for the morning, one to cover the interests of each of the professional sections. At the meeting on administration, Gurdon Flagg, Duquesne Club of Pittsburgh, was the speaker. For those interested in diet therapy, a panel discussion on "Techniques for Teaching Therapeutic Diets to Hospital Patients" was conducted, led by Helen Dineen, Magee Hospital, Pittsburgh. Community nutritionists heard two talks: "Community Nutrition from the Administrator's Point of View" by Dr. A. M. Williams, Medical Director of Allegheny County, and "Community Nutrition from the Nutritionists' Point of View" by Melva Bakkie, Director of Nutrition at Carnegie Institute of Technology. For the section on professional education, Sidney Bergman, Superintendent, Montefiore Hospital, talked on "How the Dietitian Can Contribute to the Welfare of the Hospital." A panel on vocational guidance followed.

At a general meeting in the afternoon three speeches were heard. They were: "Pennsylvania Food Laws and Their Enforcement" by Dr. William Schilled, State Chemist, Pittsburgh; "The Future of the Hospital Dietary Department" by Margaret Gillam, Dietetic Specialist, American Hospital Association; and "What's News in the Equipment Field" by James S. Forbes, Pittsburgh sales representative of the Aluminum Cooking Utensil Company. At the banquet which closed the meeting, the Very Reverend Nathaniel R. H. Moor, Dean of Trinity Cathedral, Pittsburgh, was the speaker.

As a result of the work of the Diet Therapy Section of the *Philadelphia Dietetic Association*, arrangements have been made with the American Diabetic Association for the Philadelphia dietitians to sponsor the annual exhibit of diabetic trays which has previously been the project of hospitals selected arbitrarily by the Diabetic Association. At the April meeting of the Philadelphia group, a panel discussion on "Modern Organization and Operation of a Dietary Department" was conducted. Participants were: Dr. P. F. Lucchesi, Superintendent and Medical Director, Philadelphia General Hospital; Dr. Leonard Parkhurst, Director, Out-Patient Department, Pennsylvania Hospital; Donald Reams, Business Manager, Pennsylvania Hospital Purchasing Service; and Ruth Floeck, Director, Dietary Department, Pennsylvania Hospital. The topics of discussion included: "The Future of the Dietitian," "Privileges for Department Heads," "Scope of the Food Clinic," and "Responsibilities of the Dietary Department."

Officers for 1948–49 for the Philadelphia Association elected in April are as follows: President, Julia Amerise, Womans' Hospital; Vice-President, Eleanor Bigelow; Secretary, Evelyn Carpenter, Philadelphia Hospital for Contagious Disease; and Treasurer, Beatrice Mason, Philadelphia School System.

Texas Dietetic Association. The first meeting of the year for the *San Antonio Dietetic Association* was held April 21 at Our Lady of the Lake College. Attending the meeting were members, others interested in membership, dietetic interns at Brooke General Hospital, and home economics students at Our Lady of the Lake College and Incarnate Word College. Refreshments were served by the home economics students of the hostess college. At the business meeting, the following officers were elected: President, Katherine Elliott, Our Lady of the Lake College; Vice-President, Mrs. Floyd Woods, Chief Dietitian, Nix Hospital; and Secretary-Treasurer, Capt. Ruby Z. Winslow, Director, School of Dietetics, Brooke General Hospital.

Virginia Dietetic Association. On April 23 and 24, the Virginia Dietetic Association met at the Chamberlin Hotel, Old Point Comfort, Virginia.

"Tests Show Savings of 15% With Hotpoint Equipment"

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At right, Hotpoint baking and roasting ovens in Morrison's Cafeteria Kitchen.

Morrison's Cafeteria Cuts Meat Shrinkage 9% —Saves 10% to 15% in Deep Fat Frying

HOTPOINT Electric Cooking Equipment has proved so successful in the Tampa restaurant of the Morrison Cafeteria Company, that similar equipment now is being installed in its Daytona Beach and Sarasota cafeterias.

"Our tests show that in deep fat frying, we have effected a saving between 10% and 15%," writes E. C. Krug, President. "We also save approximately 9% on meat shrinkage due to excellent temperature control and even heat distribution of the Hotpoint ovens. Ease of cleaning Hotpoint equipment and simplicity of parts replacement add to a savings in maintenance."

Hospitals find Hotpoint Commercial Cooking Equipment not only means better, more nutritious meals, but also pays for itself many times over. *Discover* for yourself how Hotpoint brings you 7 big savings every day of the week!

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Members of the Tidewater Dietetic Association served as hostesses. At the afternoon meeting on April 23, three speeches were heard, which covered a variety of interests of dietitians. Evelyn Wolfe, Dietitian, Rockingham Memorial Hospital, Harrisonburg, Virginia, spoke on "A Dietitian's Problems in a Building Program"; John L. Bruner, Consultant for Adult Institutions, Department of Public Welfare of the Commonwealth of Virginia, took as his topic, "Work with the Aged and Chronically Ill"; and Dr. Edward Levy, Clinical Pathologist, Norfolk General Hospital, discussed "The Rice Diet." Following the banquet held in the evening, Doris Johnson, Diet Therapy Chairman of A.D.A., spoke about the activities of the national Association. At the business meeting the next day, the following officers were elected for 1948–49: President, Evelyn Wolfe, Harrisonburg; President-Elect, Margaret Fitzhugh, Richmond; Vice-President, Ellasue Carr, Roanoke; Secretary, Frances Wiegard; and Treasurer, Mary Burnett, Clifton Forge.

West Virginia Dietetic Association. The seventh annual meeting of the West Virginia Dietetic Association was held April 15 and 16 at Hotel Roanoke, Roanoke, Virginia, in connection with the Carolinas and Virginia Hospital Conference. At the opening meeting, Mabel B. Gladin, President of the Virginia Dietetic Association, spoke on "Activities of the Virginia Dietetic Association." The second speaker, H. O. Coleman Baskerville, Architect of Richmond, talked to the dietitians on "Food Services Plans for the Small Hospital." At noon a luncheon was held in connection with the Hospital Conference, with Edgar C. Hayhow, President of the American College of Hospital Administrators, as speaker.

For the afternoon session, Marian McKenzie from the Myers Clinic, Phillipi, West Virginia, was the first speaker. Her topic was "Development of Good Public Relations Through the Dietary Department." She was followed by Mildred T. Tate, Head, Department of Home Economics, Virginia Polytechnic Institute, Blacksburg. In the evening the dietitians were invited to a smorgasbord dinner and dance given by exhibitors.

The morning meeting of the second day was a joint session with the Hospital Conference. Janette Carlsen, Dietitian, Johns Hopkins Hospital, Baltimore, spoke on "Hospital Expansion Challenges the Dietary Department." In the afternoon, Margaret Joseph, Dietitian, St. Joseph Hospital, Parkersburg, West Virginia, spoke on "The State Association—Purpose, Scope, and Progress." After the meetings, the dietitians toured the kitchens of the Hotel Roanoke. The program was climaxed by a formal dinner and dance.

At the business meeting of the West Virginia Dietetic Association, the following officers were elected for 1948–49: President, Ona Stinson; Vice-President, Eloise Cofer; Secretary, Vera M. Thomas; and Treasurer, Mildred Kent.

Wisconsin Dietetic Association. The Lorraine Hotel, Madison, was host to the Annual Conference of the Wisconsin Dietetic Association on April 9 and 10. On Friday afternoon following registration, dietitians enjoyed a tour of the Wisconsin Alumni Research Foundation, after which they were invited to a tea by Oscar Mayer Packing Company. At the tea, a representative of the company talked on "Meat Inspection." The banquet speaker in the evening, Dr. A. Campbell Garnett, spoke on "Intercultural Relations."

The following morning, Nell Clausen gave a paper on "The Part Nutrition Plays in the Preservation of Our American Heritage," and Ailene Hazard spoke on "Nutrition on the Air." Beulah Hunzicker, A.D.A. Vice-President represented the national Association and discussed "The Work of the American Dietetic Association." The luncheon that day emphasized international relations, and there were special guests from China, France, Italy and Holland.

In the afternoon, the dietitians enjoyed papers by Dr. Conrad Elvehjem, Dean of the Graduate School of the University of Wisconsin, whose subject was "The New in Nutrition," and by Dr. Gordon and associates on "The Use of Isotopes in Medicine." The presentation of this last paper included a demonstration of the use of the Geiger counter.

The Wisconsin Dietetic Association was also one of four co-sponsors of the session on dietetics conducted during the Tri-State Hospital Assembly in Chicago, May 5.

Association Activities

Pennsylvania Contribution to PR. The Pennsylvania Dietetic Association at its annual meeting April 29 to 30 in Pittsburgh voted to contribute $500 to the American Dietetic Association to help defray the expenses of the public relations program which is now being conducted for the A.D.A. by J. Walter Thompson Company.

Local Association Sends Money. On April 17, a letter was received in the headquarters office of A.D.A. from Frances Voris Krone, President, Cincinnati Dietetic Association. In it was enclosed a check for $250 to be used as a contribution to the A.D.A.'s Public Relations Fund. In her letter, Mrs. Krone said that this action was an expression from "our entire group as the matter was discussed at a recent meeting. The vote for the gift was unanimous. We have learned that a good Public Relations program takes repeated effort; it takes time and energy; and it takes money. We have spent money locally, but feel that a contribution to the national effort would reach a wider area."

Colorado Gives to PR Fund. The Colorado Dietetic Association, meeting in Colorado Springs on May 1, voted to contribute $25 toward helping to pay for the public relations program of the A.D.A.

Army Field Day for College Seniors. At Brooke General Hospital, Fort Sam Houston, Texas, the dietetic staff held a Field Day on May 14 for sophomore, juniors, and seniors from Incarnate Word College and Our Lady of the Lake College, San Antonio, and also the University of Texas, Austin. Some sixty guests, including dietitians from San Antonio, attended. Starting at 10 o'clock in the morning, visitors were first taken for a tour of the mess halls, ward diet kitchens, central storeroom, central butcher shop, central pastry shop, and the living quarters of the dietetic interns. Following the tour, the guests had dinner with the dietetic interns and members of the dietetic staff of the hospital. In the afternoon, a 2-hr. program was given in which the dietetic interns participated. An exhibit of posters and projects made by dietetic interns was of particular interest to the visitors. The purpose of the project was to give visitors a better idea of what dietitians do and also some knowledge of the advantages of being an Army dietitian.

Advertising Council to Mention Dietetics. In its work for the American Dietetic Association, representatives of J. Walter Thompson Company, have contacted the Advertising Council concerning vocational guidance work in the field of dietetics. A reply from the Advertising Council indicates that the A.D.A. vocational guidance program will receive mention in the "Hospital Career" program now being conducted by the Council on behalf of the American Hospital Association. Arrangements are being made to supply the Council with concrete information for use in that campaign.

News of Advertisers

Ina S. Lindman, Director of the Home Economics Department of *Fruit Dispatch Company*, has gathered together in a kit for dietitians—a collection of seven publications concerning bananas which she believes will be especially helpful. Included in the kit are the following materials: *Banana Salad Bazaar; Bakery Formulas Using Fresh Ripe Bananas; Bananas—How to Serve Them; Dietary Uses of the Banana in Health and Disease: Banana Rye Bread* (for persons allergic to eggs, wheat, and milk); *Banana Recipes for Large Quantity Service;* and *Answers to Questions About Bananas.* This kit is available on request. . . . A new line of round-corner, welded stainless steel sinks has been announced by *S. Blickman, Inc.* Known as "Value Line," these sinks come in sixteen standard sizes, and are available with one, two, or three compartments. Each sink may be had with

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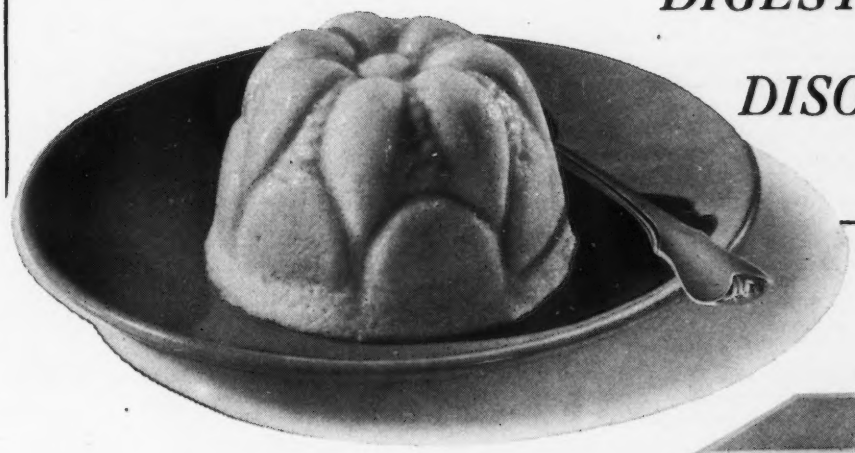

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Knox plain, unflavored gelatine contains 9 of the 10 "essential", and a majority of the 23 accepted amino acids that make up the proteins. It supplements the proteins of many food materials with which it can be combined to make attractive, highly appetizing and easily digested dishes.

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U. S. P.

All Protein—No Sugar

any one of four drainboard arrangements—two drainboards, with drainboard on left, with drainboard on right, or without drainboards. The line is designed to sell in a lower price range than the regular custom-built units. One feature of the "Value Line" sinks is the patented lever-handle waste outlet which has an externally-operated, stainless steel handle to open or shut the valve. This eliminates the necessity of reaching through the contents of the sink to get to the drain. . . . The Minute Tapioca Division of *General Foods Corporation* has added a third flavor to its line of Jell-O Tapioca Puddings—orange coconut. Chocolate and vanilla flavor tapioca puddings have already been placed on the market. . . . To promote the use of its Downyflake baking mixes, *Doughnut Corporation of America* has prepared a booklet, *New Recipes for Mass Baking*. In it are included some seventy-five large quantity recipes for the use of the sixteen different Downyflake mixes. In addition, there is a "Production Yield Chart" and a chart showing vitamin, mineral, and caloric content of the various mixes. A second publication by the Downyflake Baking Mix Division is an eight-page, 8½ by 11 folder which includes drawings that show how to handle dough to produce the following types of rolls: Parker House, round pan, finger, clover leaf, square pan, crescent, braid, star, knot, "S", and "C". . . . *About Your Hospital and Fine Food!* is the title of a new pamphlet put out by *Pfaelzer Brothers* which discusses the factors to be considered in buying quality meats. Specific points which are treated include: conformation of the carcass, finish, quality, federal meat inspection, and ageing of beef. Special attention is given to individual meats—beef, pork, lamb, and veal. . . . Two recipe books are available from the *American Honey Institute: Old Favorite Honey Recipes*, which has recently been revised, contains 175 recipes and menus, and sells for 10 cents, and *New Favorite Honey Recipes*, a sequel to the first book. It costs 25 cents, contains 150 recipes, and is spiral bound. . . . *American Can Company* has prepared a series of recipe cards for use by school lunch people. The cards include a "Buying Guide for Canned Foods," information on canned foods, and the federal school lunch program as well as twenty-one recipes for dishes suitable for the school lunch. Each recipe includes information as to number of portions, yield, size of portion, total cost, and cost per portion . . . . *Pillsbury Mills, Inc.* has put on the market a new Hot Roll Mix, and to help introduce the new product, Volume II, Number 3 of *Tasty Talk* edited by Ann Pillsbury features recipes showing how to use the new mix. . . . *The Importance of Protein Foods in Health and Disease* is the title of a new booklet available from *Swift & Company*. Prepared by its Nutrition Division, Research Laboratories, this new publication was written to inform professional people of the most recent scientific advances in knowledge of protein. It is divided into eight different chapters, which cover such topics as: general significance of protein in nutrition, concept of nitrogen or protein balance, daily protein requirements, effects of infectious diseases and of trauma on body protein, special functions of some amino acids, and so on.

Food and Medical Problems After an Atomic Attack

If an atom bomb should fall on an American city, a major function of the physician after such a disaster would be to act as a public health officer. Most food in the affected area would not be unfit for consumption, but it would all have to be surveyed before it could safely be eaten. All of the water in the region would probably contain radioactive isotopes, slow poison to anyone drinking it. But research is in progress on methods of removing radioactive substances. Obviously, the usual boiling or chlorination would be useless. There is some indication that filtration and other methods can be developed.

Physicians would have a heavy responsibility in supervising the decontamination of not only food and water, but of refugees, by means of complete change of clothing, bathing, and so on. This requires familiarity with the use of detecting instruments, such as the Geiger counter, and a knowledge of the kinds of persistent radiation to be expected. (People escaping from the area where a bomb has exploded may find their wearing apparel sufficiently radioactive to constitute a menace to others.) This problem has already come up in hospitals where patients were being treated with large amounts of radioactive material.

Following the bombing of Hiroshima and Nagasaki, much was learned of what symptoms to expect, overt and latent, immediate and delayed. All the results will not be in for years, of course.

Beside flash burns from enveloping hot gases, such as result from any powerful explosion, blisters similar to skin burns and sunburn are likely to appear on the skin of atom bomb victims. In Japan, burns and blisters appeared to follow a definite pattern, showing up within 5 min. on those close to the explosion. At nearly a mile away, they did not show for several hours, and at greater distances, up to about 2 mi., the appearance of burns and blisters was even longer delayed.

Of the superficial effects, perhaps the most alarming is the falling out of the hair. While bound to cause a bad psychological effect, it is due to superficial radiation and is not serious in itself. The hair will return if the patient has not received a lethal dose of radiation.

Immediately after a bomb blast, those in the vicinity who escape immediate death from shock, burns, or falling debris may appear to have suffered no ill effects at first. But within a few hours, victims seriously affected will feel nauseated and start to vomit. This may pass in a day or so. But at the beginning of about the second week, when the hair starts to fall out, the feeling of general malaise, experienced in the first few hours, may return accompanied by fever. There is likely to be bloody diarrhea. Examination will show that the white blood count has fallen to a very low level. Death may come very quickly, or there may be anemia and general debility over a long period with eventual recovery. Physicians must be prepared to expect such a syndrome and to take nothing for granted about the condition of the patient during the first few days.—*Excerpted from a talk given by Colonel James P. Cooney, Army Medical Corps, at the Pennsylvania University Hospital, Philadelphia, on April 11, 1948.*